THE THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE.

Whole Series, Vol. XXXVII. | DETROIT, MICH., MARCH 15, 1913. | Third Series, Vol. XXIX. No. 3.

ORIGINAL COMMUNICATIONS.

FECAL FISTULA.[1]

BY JOHN B. DEAVER, M.D., Sc.D., LL.D.,

Professor of Practice of Surgery in the University of Pennsylvania, and Surgeon-in-Chief General Hospital, Philadelphia.

In addressing this Academy I assure you I appreciate the honor you have conferred in selecting me to read a paper this evening. I have thought it worth while to discuss before you a subject that has interested me very much, and I am sure interests you too, namely, fecal fistula. My experience embraces more cases than the one hundred I include in this paper, yet this is a sufficient number for us to draw the important lessons to be learned therefrom.

When the fecal current is diverted from its normal course in the intestinal canal through one or more abnormal openings in the wall of that canal, we have a fecal fistula. Acute perforations are, however, not so designated, and the term is applied solely to those perforations, subacute or chronic, through which occurs a constant or intermittent discharge of fecal material upon the surface of the skin or into an adherent hollow viscus. Examples of the latter variety, the so-called internal fistulas, are those which occasionally form between the bladder and the rectum, intestine or appendix, between the appendix and the Fallopian tube, between the duodenum or other portion of the intestinal canal and the gall-bladder, between the appendix and the ureter—indeed, it may almost be said that any portion of the alimentary canal may upon occasion find itself in communication with any one of the hollow abdominal or pelvic viscera. Curious and interesting as these forms of internal fistula are, it may be said of them in general that they are the result of neglected pathology and dilatory treatment, and for the subject to-night I have confined myself to the type of fecal fistula which discharges upon the surface of the skin. From the readiness with which the fecal character of the discharge may be recognized, a diagnosis of the condition once established presents no difficulty, and cases have been observed and commented upon as far back as Hippocrates. These occur at times spontaneously as a sequel to inflammatory disease, most often the "iliac passion," but direct trauma was more often responsible for the condition. In more recent times fecal fistula has become much more common, the elements of trauma being furnished by surgery and in practically every instance being superposed upon a pathological condition predisposing to necrosis and perforation of the bowel. The part which surgery has played to increase the frequency of fecal fistula is nothing to its discredit, inasmuch as it is in many instances but an unavoidable sequel of the guidance of intra-abdominal infection and its products out through the abdominal parietes, thereby in the majority of cases preventing the infection taking a more dangerous direction.

Anatomically we recognize two forms of fistula: first, those which communicate with the outside world through a tortuous tract, involved in adhesions and newly formed connective tissue; secondly, those in which the bowel is immediately adherent to the abdominal wall. The second variety is

[1] Read before the Harrisburg Academy of Medicine, Nov. 29, 1912.

often lined with mucous membrane continuous with the skin. The first variety is more likely to heal spontaneously than is the second.

In fistulas of the first variety the tract is, as a rule, of small caliber and the discharge of fecal material relatively slight, or may be intermittent and often mixed with pus. In some instances it may be profuse, though it is practically never the case that the entire fecal current is diverted out through the new opening. In the second variety of fistula, that in which the bowel is immediately adherent to the abdominal wall, there may be only partial leakage of the intestinal contents, or the whole of the fecal stream may be diverted outward through the new opening. In the latter case there is present a well-marked spur, formed of the coats of the bowel at its mesenteric border, which prevents the contents from entering the lower segment. Such a condition is known as an artificial anus, and while it may occur spontaneously, it is usually purposely created by the surgeon for the relief of obstruction in the bowel below. In one case which came under my observation in the German Hospital the patient himself opened an inflamed and strangulated hernia with a needle, thereby relieving his obstruction and creating a fecal fistula.

A fecal fistula becomes more serious the higher up in the bowel it occurs, for the reason that digestion, assimilation, and nutrition become increasingly difficult the more bowel thrown out of function. A complete fistula in the upper jejunum causes rapid starvation and eventually death unless quickly remedied. Fortunately, for clinical reasons shortly to be stated, the great majority of fistulas are in the lower ileum or large intestine, or both.

The causes of fecal fistula in the first instance may be illustrated by the following tabulation of 100 cases:

FINDINGS AT ORIGINAL OPERATION.

73 cases of appendiceal abscess.
9 cases of acute appendicitis with peritonitis.
4 cases of salpingitis.
3 cases of strangulated hernia.
1 case of peritonitis, unknown origin.
1 case of fibroid uterus and chronic appendix.
2 cases of perforated cecum, one typhoidal.
1 case of fecal fistula.
1 case of perforated ileum, typhoidal.
1 case of gall-stones.
2 cases of ovarian cyst.
1 case of umbilical abscess.
1 case of perinephric abscess.

Tuberculosis, actinomycosis, or carcinoma of the intestines may also be the starting-point of a fecal fistula, particularly when operated upon under conditions in which drainage is necessary.

This compilation makes clear the fact that appendicitis is by all odds the most common cause of fecal fistula. This follows naturally from the fact that appendicitis is the most common intra-abdominal disease; that in its acute form, in the absence of early operation, it is frequently followed by periappendicular abscess; that the walls of such abscesses are frequently made up of coherent loops of small or large intestine; and that the pressure of confined purulent collections, plus the harmful effects of bacterial toxins and the histolytic action of the enzymes liberated by the leucocytes, continues to weaken, ulcerate, and eventually to perforate the bowel. That delay is influential in producing this complication is seen in the fact that the average duration of the acute disease before operation was about three days—far too long a period in the present state of our knowledge and preparedness to meet the condition. That it is a complication of the more severe forms of the disease can be seen from the mortality, which without operation or any special treatment for the fistula itself was 6 per cent. The formation of the fistula under the circumstances is not always a disadvantage but is sometimes salutary. Frequently it is ushered in by symptoms resembling obstruction or peritonitis.

In the formation stage of fecal fistula the symptoms are those of a localizing intra-abdominal irritation, with paroxysmal pain, nausea, distention, inability to pass flatus freely, if at all—in other words, the inaugural symptoms of intestinal obstruction. The pulse-rate increases and the temperature rises sometimes to 104° or 105°, usually about 101° to 103°. The

question naturally arises, is the patient developing an intestinal obstruction or a secondary abscess? So soon as the fistula is established there is an amelioration of the symptoms, with the exception of fever, which usually lasts for a few days. This is doubtless due to absorption of toxic material by the walls of the tract when in a fresh condition. As the sinus becomes chronic, absorption is guarded against by exuberant granulations, and fever disappears entirely or persists only as a slight evening rise.

After the acute symptoms subside there remain several more or less serious and disagreeable consequences. As above stated, the nutrition of the patient may suffer considerably, the degree of wasting as a rule being directly proportionate to the higher or the lower situation of the fistula in the bowel.

In some cases also the fistula in making its way to the surface sets up a phlegmonous inflammation of the soft tissues of the abdominal wall, which suppurate and may discharge upon the surface by several fistulous openings. The subjacent tissues may remain in a state of brawny infiltration and harbor small infective foci, from which the patient suffers a chronic toxemia. In some instances the abdominal wall is undermined, and effective drainage is impossible without recourse to surgery and the free opening of the ramifying passages in the tissues. The treatment of this condition must necessarily precede any hopeful treatment of the fecal fistula itself. The condition of the patient suffers materially until absorption from the sinus tract is reduced to a minimum.

The skin about a fecal fistula is apt to become red, tender, and excoriated. The discharges which are constantly issuing from the fistula produce an intolerable burning sensation. Particularly is this true in high fistula, when the bowel contents contain much pancreatic juice and bile, the action of which is exceedingly irritating to the tissues with which it comes in contact. The best preventive for this condition of the skin is to keep it well covered with the oleate or stearate of zinc ointment, which is not easily washed away and protects the skin from direct contact with the discharge. In my experience the only thing that will positively prevent skin excoriation is either the spontaneous healing of the fistula or successful operation.

Finally, the persistence of a freely discharging fecal fistula is an intolerable annoyance to the patient. It is disgusting alike to himself and to all about him. The odor and the involuntary escape of gas prevents him from mixing with his friends. Relief is imperative, but there are few conditions which may so tax the patience and fortitude of the patient or the skill and resources of the surgeon as fecal fistula. Fortunately such fistulas have a pronounced tendency to close spontaneously if let alone. The key-note of successful treatment is "masterly inactivity." "Let them get well" is the motto to adopt. The well-meant efforts to keep the anus clean by irrigating, swabbing, probing, or draining are often the very means by which the fistula is kept open. A sinus open at both ends can hardly be the seat of any marked retention of pus. The formation of deep abscesses is met with occasionally in the shape of a secondary collection and calls for a secondary operation, a counter-opening and drainage. We should take advantage of the well-known tendency for a fistulous tract to contract and eventually obliterate itself, and not hinder the process by the introduction of any foreign body. I have more than once been consulted in regard to persistent fecal fistula in which a drainage-tube was used to facilitate discharge of the secretions of the sinus, and have seen such tracts close as if by magic by the simple expedient of abandoning drainage and keeping the surface protected by a piece of sterile gauze. A loin fistula is not so likely to heal as those which emerge anteriorly or in the groin, probably for the reason that these fistulas generally come from the cecum or ascending colon in its retroperitoneal portion or amongst enveloping adhesions, a condition which is unfavorable for either spontaneous or operative cure.

In the way of general treatment it is im-

portant not to use any purgative medicine, but to keep the bowels moved by simple enemas only.

All general hygienic measures that tend to benefit nutrition and bodily resistance, such as fresh air, sunlight, and good food, should be employed. In the way of diet only the most digestible and least bulky articles should be selected. The higher up the fistula the more objection there is to liquid nourishment, and *vice versa,* though in general it may be stated that fluids should be given sparingly. There is no objection to the patient getting up and about as soon as his strength is equal to it, and in some cases the ordinary duties of life may be resumed without necessarily preventing spontaneous closure of the fistula. It is better whenever possible, however, to restrict the patient's activity to light and pleasurable exercise.

Under this line of treatment we found that 31 of the fecal fistulas in this series closed spontaneously at intervals varying from five days to twelve months.

It is rather difficult to understand why some fistulas will not close spontaneously when others apparently similar will become obliterated under simple expectant treatment. In the case of high fistula with wasting and marked impairment of the patient's strength death may occur from inanition before the slow process of obliteration has time to effect closure. In these cases operation is a necessity. Also in fistula of the second class, where the surface of the shallow sinus tract becomes covered with epithelium which is continuous from the cylindrical epithelium of the mucosa to the squamous-celled covering of the skin, it is clear that closure will not occur. Similarly where obstruction is a factor, as in the case of spur formation in the course of the lumen or when the bowel is constricted below the opening, operation is the only method of relief. When, further, the pathological condition at the bottom of the perforation in the wall of the bowel is of a specific nature, such as tuberculosis, actinomycosis, or carcinoma, it is idle to look for spontaneous closure.

These are the chief causes of failure of fecal fistula to close of its own motion, but there is in addition a considerable number of fistulas which are, so far as we are able to determine, due to simple pyogenic activity which nevertheless fail to exhibit any signs of permanent closure after the expiration of a considerable period.

The question of the time at which we should conclude that spontaneous cure will not result is a difficult one and must be settled differently in individual cases. So long as discharge is apparently lessening I would advise against operation, unless the fistula be of such a character that the condition of the patient is suffering to a dangerous degree. In the average case it can usually be determined with fair safety that a fistula which is stationary after the lapse of three or four months is likely to remain permanent, and should the condition be intolerable or dangerous to the patient operation is justifiable after that time. Not only does precipitate operation upon these cases deprive them of a deserved chance to get well spontaneously, but the difficulties of surgery are greater soon after the primary disease than they are later when exudates, infiltrations, and in large part adhesions have been absorbed.

The surgical problems presented by fecal fistulas are sufficiently taxing in any event. Given a simple fistula with a short sinus tract it is not very difficult to excise the fistula by an elliptical incision and close the opening in the bowel. The great danger in all this work is due to infection, exposure to which cannot be wholly avoided owing to the necessity of working through a contaminated field. This danger should be minimized so far as possible by scrubbing, irrigation of the sinus, and, if feasible, by sewing or clamping the opening during the operation and cutting wide of the infected area. It is necessary to operate with great care and deliberation, since landmarks are obscured, and one must often feel his way to avoid doing injury to intact bowel or other structures.

The following operations were performed:

Invagination	30
Invagination with ileocolostomy	12
Resection of ileum with ileocolostomy	4
Resection of ileum with lateral anastomosis	1
Invagination with resection of ileum and ileocolostomy	2
Resection of cecum and ascending colon and ileocolostomy	1
Resection of ileum with end-to-end anastomosis	2
Resection of sigmoid with ileosigmoidostomy.	1
Resection of ileum, cecum, and ascending colon (Had had previously an ileocolostomy.)	1
Resection of cecum with ileocolostomy	1
Invagination with lateral anastomosis	1
Total	56

Eight Secondary Operations—

Release of adhesions with enteroenterostomy.	1
Resection of ileum with ileocolostomy	1
Invagination of cecum and ascending colon.. (Had had previously an ileocolostomy.)	1
Resection of descending colon and sigmoid... (Had had previously an ileosigmoidostomy.)	1
Invagination of sigmoid	1
Invagination of cecum	3
Total	8

In this series there were operated 56 cases, 8 of these requiring reoperation—64 operations in all. Unopened, 44 cases.

Of the 64 operations there were 8 deaths, all occurring after the primary operation.

There were 11 cases of acute intestinal obstruction in this series, all of which were operated and all of which recovered.

Of the 44 unopened cases, 31 recovered spontaneously (complete closure of the fistula). Of the remaining 13 unoperated cases there were 6 deaths. Of the remaining 7 cases we were not able to get sufficient data to make it reliable enough to draw conclusions.

The principle of all operative work in fecal fistula is first to find the opening of the bowel and close it, and secondly to obviate obstruction at any part of the intestinal tract, which may occur as the result of the disease or the operation, by means of anastomoses or excisions where necessary. If the bowel at the point of the fistulous opening is not completely invested with peritoneum, operation is less likely to be successful. Hence it follows that openings in the cecum or other part of the bowel which is not provided with mesentery are harder to close than openings in the small bowel. The most difficult part of the operation is often the finding of the opening in the bowel. The situation of the opening upon the surface of the skin may give no clue as to the location of the perforation of the bowel, which is connected with the opening by a narrow and tortuous tract. Commonly there are numerous adhesions about the opening, and only those who have made the attempt can realize how difficult it may be to recognize a sinus under these conditions. It is sometimes helpful to place a guide, such as a rubber catheter, in the sinus before opening the abdomen, yet this cannot always be done, and the surgeon must dissect away the adhesions and trust to vision in discovering the sinus. Under these circumstances it is easily possible to do more harm than good. The opening, if not too large, may be purse-stringed and oversewn with a few Lembert stitches.

As above stated, if peritoneal surfaces can be approximated there is every prospect of successful healing, but where it has been necessary to denude the surface of the bowel of adhesions there is less prospect of success. If the omentum is available it may be tacked down to the suture line and helps greatly in maintaining closure. An epiploic appendage may be used in the same manner. In any event drainage should be employed in order to guard against the risk to life should the suture fail to hold. When the opening in the bowel is large, simple repair may compromise its lumen. At times by suturing the rent transversely the caliber may be preserved when longitudinal suture would materially narrow it. In case of doubt as to sufficient patency it is best to make an enteroenterostomy between the bowel above and below, not only to avoid the possibility of obstruction, but also to take the tension away from the repaired portion during the process of healing. Or a resection may be done and end-to-end anastomosis performed. This will usually be an operation of greater moment than a simple anastomosis without excision and serves no better purpose. It should not be done, therefore, unless indications in the

shape of ineradicable disease of the affected loop of bowel are present. But the operation must be made to fit the condition.

I recall a case in which there was present an opening in the rectum, too large for simple repair and too low for anastomosis, and in which I did not wish to substitute an artificial anus by fixing the proximal end of the bowel into the wound for the fistula. In this case I grasped the upper margin of bowel, which had been slightly mobilized, with clamps inserted through the rectum from below. The upper bowel was then pulled down and invaginated through the rectum in much the same manner as has since been described by the Mayos in the operation for resection of the sigmoid and upper rectum. The bowel was held in place by a few stitches and united without giving rise to any untoward symptoms whatsoever, except occasionally loose bowel during convalescence.

All cases do not end so fortunately. There is a very pronounced and seemingly unavoidable mortality in dealing with fecal fistula. As is the case with most difficult surgery, prevention is better than cure, and in the prevention of fecal fistula the early operation for appendicitis occupies the leading place.

The citation of the following two cases illustrates the pathological side leading up to the formation of a fecal fistula:

Mrs. O. H., fifty-two years, admitted to the German Hospital, April, 1912, with acute appendiceal abscess. Sick since April 7; was purged in the beginning of the illness.

Operation: Loin incision, large amount of pus evacuated. The appendix was not removed. Ten days later a fecal fistula appeared.

June 12, 1912, fecal fistula repaired and the appendix, which was separated from its base, removed. Two openings in the cecum and one in the lower ileum were closed, and an ileocolostomy made. Recovery uninterrupted and complete.

A. Y., aged forty, admitted to the German Hospital, May 7, 1912, with sinus of lower right abdomen discharging feces. Was always in good health until September, 1911, when he had an attack of acute appendicitis, for which he was operated in a hospital outside of Philadelphia. The appendix was not removed—simply incision and drainage of abscess.

This operation was followed by a sinus discharging fecal matter. In February, 1912, was operated on in the same institution for the repair of the sinus. In March was operated the third time in the same hospital. Patient has been in this hospital for the past eight months.

When admitted to the German Hospital the patient had lost considerable weight, and all in all was in bad shape. The lower right abdomen presented a scar and an excoriated condition of the skin in the neighborhood of the opening, which extended well up into the loin space, with a fistulous opening about midway in the scar.

On May 13 I opened the abdomen through the right rectus, making an ileocolostomy, attaching the ileum near its termination to the transverse colon, closing the wound and going over and exposing the sinus when I found it was in communication with two loops of terminal ileum and the cecum; these were closed with Lembert sutures, but unfortunately did not hold. In addition to the fistula there was a collection of pus occupying the postcolic space; this was evacuated and drained. The patient recovered nicely, but the fecal fistula recurred, not discharging nearly so much material however as before the operation. I allowed him to go home in four weeks, when he could have the advantage of fresh air and report later. On the 27th of August, 1912, I operated on him again, excising the terminal part of the ileum, cecum, and ascending colon. The patient made an uneventful recovery and went home perfectly well.

I desire to thank Dr. Harry Merscher and Dr. Howard A. McKnight, my house surgeons at the German Hospital, and Dr. L. A. Shoudy, my house surgeon at the Children's Hospitai, Mary J. Drexel Home, for going over the records and compiling the statistics for this paper.

DESICCATION AS A THERAPEUTIC MEASURE.

BY ROBERT L. PITFIELD, M.D., PHILADELPHIA.

Perhaps one of the oldest antibacterial measures known in the arts of man is desiccation. All are familiar with desiccated foods, such as fruits, fish, meat, etc. Drying deer and fish flesh as a means of preserving was known to the Indians probably before the earliest medical book was written. Proteid or carbohydrate deprived of all water is of course an unfavorable culture medium for bacteria; often, of course, salting or smoking the food, contributing some bactericidal substance, increases the keeping quality of the preserved articles.

In medicine various methods have been employed to hasten desiccation as a means of promoting healing. A leg or arm dry, dead, and of course gangrenous, is a comparatively harmless member compared to a moist gangrenous limb. Desiccation may be said to be a very powerful agent in effecting spontaneous amputation of a dead extremity, and is therefore a valuable conservative curative agency.

Physicians have for a long time endeavored to encourage this: witness the old method of adding lint to an ulcer to encourage scabbing or drying. Drying probably does more toward limiting the spread of contagion than any other agent save oxygen and light. Pasteur found that the virulence of a spinal cord for a case of rabies became rapidly attenuated if hung to dry in a desiccating chamber. The bacteria that most quickly yield to the mildest germicidal chemicals also succumb quickest to the effects of drying. Bacteria live best in moist or hygienic media. The cholera vibrio and the typhoid bacillus die quickest because of a thin enveloping membrane, while spores and tubercle bacilli, because of tough, impervious coats, die hardest when exposed to chemicals and the effects of drying. Dust often harbors anthrax spores and tubercles and tetanus bacilli for years.

Employing desiccation as an agent one must consider that it acts in at least two ways. By simply dehydrating the protoplasm of bacterial cells life becomes extinct because of disintegration of the proteid either chemical or mechanical. By dehydrating the media in which such bodies live, as culture media, blood serum, pus, and other fluids, infection is resisted because of the interference with growth, motility, and migration of bacteria. Phagocytosis is probably more effective in a slightly concentrated serum; opsonins by concentration as well as antibodies are in all probability more powerful as the concentration increases. Dehydration with syrups and glycerin is an effective way to preserve albuminous matter.

The earliest effective protection against infection with bacteria in any body is the drying of the umbilical cord. Simply enveloping it in a bit of dry sterile gauze is a much more effective method than adding any agent, such as boric acid, with hygroscopic properties, to the cord. Using gauze alone, with free access of air from time to time, allows separation in three days; by adding boric acid the cord will not separate often for two or even three weeks, and a good cicatrix results more frequently from the former than with the latter method.

Often skin diseases are aggravated by moisture. Those parts of the body frequently wet are the seat of obstinate and annoying affections. The axilla, the groin, the nates, prepuce, and vulva are often infected with various microörganisms which live tenaciously in spite of cleanliness and antiseptics, whereas in other parts of the body they would quickly die upon mere drying up.

Quite a school of surgery has developed about the dry treatment of wounds. Good surgeons will never wash a clean uninfected incision when dressing it, not even moistening the gauze to loosen it from the wound. Burns are best treated by dry methods, as the history of the two cases narrated below will show, and as it has been shown by numerous observers. This case is of interest:

Baby D., aged eleven months, in very hot July weather was scalded badly. The whole

back was one huge bleb from the neck to waist. He was much shocked and suffered greatly. By keeping his back clean and perfectly dry and exposed at all times to the air, and with the aid of plain stearate of zinc and a single layer of gauze, the bleb at the end of twenty-four hours began to dry up; in forty-eight hours desiccation was almost complete. At the end of ten days the back was clean of all blebs and most of the scabs, save in one fold of the skin above the nates which was frequently wet with urine. This became slightly infected and ulcerated, but finally healed under dry treatment. The only scarring occurred in this area, which was about as big as one's thumb. Morphine was used to allay pain and encourage quiet, so that the drying treatment could be carried out.

Baby M., aged two years, in August pulled a pot of boiling syrup over his arms and chest. Morphine, stearate of zinc, and gauze were used. Drying was encouraged in every way, with the result that a large scald about ten inches square quickly yielded to treatment and in a week was nearly well. No scarring occurred, and very little remains of what threatened to be a very serious injury.

If moist measures, such as compresses, oils, etc., had been used infection in both instances would surely have occurred, and there would have been ulceration, scarring, and a whole chain of ills that follow in the wake of infected burns.

Dry methods in the treatment of ulcers are among the best employed. Simply keeping a leg ulcer exposed to the air, lightly dusted with aristol and stearate of zinc, is a most effective way to treat it, especially if the patient will lie down and elevate the leg and protect it with a diaphanous layer of gauze to keep flies and dust from lighting on the ulcer.

After all, drying is Nature's best way of treating such infected surfaces. Anything that hastens desiccation, such as stearate of zinc, contributes quite a little to the cure, but the main thing is the rapid withdrawal of liquid pabulum from the bacteria and the concentration of the bactericidal agents in the wound.

THE TREATMENT OF NEURITIS.

BY WILLIAM MARTIN, M.D., ATLANTIC CITY, N. J.

The choosing of so ordinary a subject as this may call for an apology, but if frequency of occurrence is any excuse, I will offer that as mine. Again, the well-known intractability of the disease gives one the chance to advocate a line of treatment that some may not be well acquainted with, as it is in the line of physio-therapeutics, and not of drugs.

To fully understand the reasons for this form of treatment, it may be best to discuss neuritis from the etiologic and pathologic standpoints.

The common or usual form is a simple inflammation of a nerve or set of nerves, localized, and its cause can usually be traced to one or more of the several factors, viz., cold, traumatism, occupation, sepsis, cachexia, or from an extension of an inflammation from an adjoining part, such as caries of a tooth.

The acute stage shows inflammation with redness and infiltration of the surrounding tissues. This inflammation may be interstitial, with an accumulation of lymphoid elements between the nerve bundles. In this type the inflammatory process extends into the deeper parts of the nerve. The usual form is the perineural. In the parenchymatous type we find the changes similar to those that are seen in the secondary or Wallerian degeneration, with the result of the nerve fiber being cut off from the cell body of the neurone to which it belongs.

The pathology is that the "myelin becomes segmented and divides into small globules and granules, and the axis cylinders become granular, broken, subdivided,

and finally disappear. The nuclei of the sheath of Schwann proliferate, and ultimately the fibers are reduced to a state of atrophic tubes without a trace of normal tissue or structure."

This atrophy extends to the muscle supplied by the nerve, producing marked changes in the interstitial muscular tissues, in some cases only local in character. The nerve involved is sensitive to pressure through at least a part of its length, due probably, as suggested by Mitchell, to irritation of the nervi nervorum. The greatest points of sensitiveness are at the bone exits, or where it traverses tissues over prominent bones where the muscle is too thin to act as a buffer.

As the result of neuritis the function of the muscle is affected, there is pain on motion, and frequently there are painful twitchings and muscular contractions. The tactile sensation of the part may be deadened even when there is increased pain. In the chronic type, severe pain is not generally present, but there remains a soreness and numbness for a long time. This is particularly true of the brachial neuritis, and the great pain and soreness is often most felt when the arm is lowered after having been elevated. In some cases there can be felt a swollen cord-like sensation, with a distinct tenderness upon pressure. In this form of neuritis degenerative changes may take place, causing loss of motion and atrophy, and in the involvement of the musculospiral nerve there may be wrist-drop. An extension of the process may cause contracture of the fingers or the so-called claw hand.

If the neuritis is of the rheumatic type, nodules may be found on the finger-joints. These may or may not be tender. In some fortunately more rare cases there may be the ascending type of neuritis with a rapid degenerative change, progressing through the main nerve trunk to the spinal cord. This is more likely to be the result of traumatism than any other cause.

According to Mitchell the larger nerve trunks are more susceptible to neuritis, and it may extend either up or down, more commonly up. It may become bilateral either by spinal cord extension or through the sympathetic system. There may be slow or sluggish reaction to the constant current, or the reaction may be almost as pronounced as in the normal muscle.

The duration of neuritis varies from a few days to several months, according to the involvement.

The cases that most frequently come to our notice are those of the milder type. In these there are no degenerative changes. They show marked tenderness on pressure upon the affected areas, and relief is sought because of pain, principally when the muscle is in use and not so much when in repose. In the brachial form the pain is greatest when the arm is elevated, such as in combing the hair or in buttoning the dress.

In the sciatic form of neuritis there may be a history of gout or rheumatism. Here the involvement is of the trunk of the nerve or its cords of origin. The most sensitive points are usually over the sciatic notch or at a point about the middle of the thigh. The inflammation is often interstitial, and the nerve is red and swollen, as is demonstrable at the time of operation of stretching. The pain is of the burning or boring type, and may be paroxysmal, but is often constant, and usually worse at night. Posture and motion generally affect it, and one is apt to walk on the tip of the toes in order to prevent jarring and to relieve the tension. In some cases of long standing we find considerable muscular atrophy. Occasionally there may be found herpes along the course of the nerve.

The diagnosis is usually easy, but there is a possibility of conflicting it with sacro-iliac disease. The use of the *x*-ray will easily determine this.

The prognosis as a rule is good, but the time required for a cure is variable, owing to the many factors that have play in the given case.

The treatment of neuritis may be considered from both the medicinal and physiotherapeutic standpoints, although for the purposes of this paper I shall treat only of

the latter method. The usual form of treatment by drugs has ever been most unsatisfactory, particularly when the sciatic is involved, therefore it is natural that the live physician should look around for other methods of treatment which offer some hope.

That neuritis is in most cases cured can be easily demonstrated. There may be a small number of incurable cases, proportionately, but even some of these are amenable to benefit if treated by physical methods. This has been proved repeatedly by a number of physicians who have used these measures. In the treatment of neuritis we must not lose sight of the causative factors of the individual cases, for these are often guides to a successful outcome. We must take into consideration the patient's method of living, occupation, diet, and habits in general, if we are to expect the best results, for we must not treat cases empirically. If the diet is faulty, correct it, for we often find that the patient does not use a well-balanced diet, especially in those cases of lowered nutrition.

This obtains also in some cases in which neuritis follows a long spell of sickness, when the vitality is lowered and the diet has been faulty.

If occupation is a cause, wherein pressure upon a nerve or set of nerves acts as the factor, the first thing to do is of course to stop the work, at least temporarily, giving the nerve a chance to rest and recover.

In those cases of neuritis associated with other diseases it is important to treat the systemic fault at the same time that the neuritis is being attended to.

It is not unusual to have neuritis in cases of toxic hypertension, and here it is very essential to care for this high blood-pressure by the use of the high-frequency current by the autocondensation method. Diet here plays an important part, for the proteids must be very largely cut out, if not entirely.

Neuritis from pressure merits more than passing attention. These cases are not always patent, but require considerable study and investigation. This particularly obtains in the sciatic form. In women we must bear in mind the possibility of uterine displacements, as well as pressure from poorly fitting corsets. In men we should examine each case for a possible enlargement of the prostate, even though there be no vesical symptoms to attract one's attention to that part. In either sex we may find indurations causing pressure, so it is always important to follow the nerve course by palpation in order to locate any possible pressure from this cause. Adhesions to the muscle sheath or at a point of exit of the nerve from the bone play their part. In these cases manipulation used properly has great value. This can be demonstrated in the occipital and supraorbital types. To treat neuritis successfully, one must be willing to recognize all kinds of treatments that have proven of value, even though this may lead to a radical departure from all of the laid-down methods of the past. Those of us who have been using the electrical modalities for neuritis cannot speak too strongly for their employment, but I must emphasize the necessity of their proper use.

The electrical currents cannot be used empirically any more than other methods. Each case requires a careful study of its needs, otherwise one is doomed to a miserable failure.

A large number will respond to the static wave current very promptly, while others may be made uncomfortable by its use. In employing the static wave, it is well to test by the use of a small spark-gap, increasing slowly, and if this gives relief it is safe to proceed with it. The improvement should be fairly progressive, and generally is. With this may be used with advantage the 500-candlepower lamp of the leucodescent type, for the hyperemic effect.

Those cases which do not respond to the static wave often do well under the high-frequency current. This can be applied by the thermo-penetration method, the smaller plate being applied over the seat of pain and the indifferent plate over a part opposite or nearly so. The length of treatment will depend largely on the case, fifteen or twenty minutes being enough in the average case.

The amount of current varies in the different cases also. I find few will take more than 650 to 1200 m.a., and the latter only in some rather severe sciatic types.

In the cases in which an enlarged prostate plays a part, we must treat this by the present-day methods. This is by the static wave-current applied per rectum with the metal prostatic electrode. Some prefer the vacuum-tube electrode either with the static or the high-frequency current. They both have their value, although my preference is usually for the static wave applied through the metal electrode. In addition to this treatment, of course, the wave-current must be applied to the nerve in the usual manner. Occasionally we meet with cases which do not respond to the usual methods of treatment. These may require the use of the constant current, either applied in the usual way or by the ionic medication method. Those who have had a large experience with this latter method are very enthusiastic. This should lead others to investigate, and if possible to get equally good results.

It has not been my object in this paper to go into the technique of treatment of neuritis, as this can be found in the textbooks, but rather to call the attention more particularly to the fact that this so-called intractable disease is really amenable to treatment, if that treatment is of the correct type and properly administered.

It cannot be said that failure is impossible even by these methods, for there are cases which seem beyond possible cure, but they are so few in number comparatively that they are almost negligible, and very likely the result of the use of the improper modality.

The old saying that "the proof of the pudding is in the eating" applies here. If more physicians would be willing to throw aside prejudice and give the electrical modalities a thorough trial, I am sure that they would be convinced and ever after be among the numbers doing this work, or at least advocating the modern electrotherapeutic methods.

MARYLAND AND PACIFIC AVES.

EUCALYPTUS IN THE TREATMENT OF PULMONARY TUBERCULOSIS.[1]

BY L. G. PEDIGO, M.D., ROANOKE, VIRGINIA.

In beginning a paper on one aspect of a time-worn subject—the treatment of tuberculosis—let me explain at the outset that I have no notion of presenting an elaborate or exhaustive treatise even on the narrow line I have selected. On the contrary, I am merely making a suggestion as to *one* item in the *drug* treatment of pulmonary tuberculosis, and this is a preliminary paper on that subject. I have no specific to offer, I promise no miracles. Twenty-five years ago a German with an unpronounceable name reported a series of clinical experiments on the hypodermic use of oil of eucalyptus in pulmonary tuberculosis. He reported results which I thought at the time did not deserve to fall. His work suggested to me a line of thought on which I have been experimenting at intervals for several years.

The premises are something like this: Oil of eucalyptus is known to be inimical to the lower forms of life, notably bacterial and parasitic forms, inhibiting their growth and development in some dilutions, and in stronger percentages acting as a pronounced germicide. In the second place, given whatever percentage of this agent in the circulating fluid, it will be eliminated chiefly by way of the lungs—the habitat of the tubercle bacillus in pulmonary tuberculosis. Again, it must be borne in mind that oil of eucalyptus, like other essential oils, is irritating to certain mucous membranes and especially to the lining membrane of the stomach. So we are practically debarred from this avenue, particularly in view of the fact that every case of tuberculosis at

[1]Read before the Roanoke Academy of Medicine, Nov. 18, 1912.

whatever stage is complicated with a more or less subacute or chronic gastritis. Our German authority's method is objectionable in two particulars: It is locally irritant, and is therefore found experimentally to produce even in the non-tubercular subject a slight rise in temperature; then it requires a skilled person—doctor or trained nurse—present at every administration of the remedy.

In casting around for a method of using this drug, getting it into the blood, securing its elimination by the lungs, and yet taking a flank movement around an oversensitive stomach, two ideas occurred to me. While the skin is so constituted that it cannot absorb a liquid, it is a well-known fact that it will absorb with great rapidity volatile substances in the form of vapor. A good illustration of the use of this principle in practical therapy is found in the old method of mercurial fumigation in the treatment of syphilis. Another more striking exemplification is recalled from an experimental investigation of the Russian bath some years ago, when it was found that a man weighed more after a vapor bath than before—this notwithstanding his heavy loss by perspiration. Oil of eucalyptus is very volatile and may be introduced into the circulation by vaporization. But we are met at this point by one insuperable objection, viz., that in order to avail ourselves of this method it is necessary to subject our patient to a more or less prolonged superheated vapor bath, producing as a by-product an exhausting colliquative sweat, thus incurring the danger of killing an already relaxed and enfeebled host before our remedy has had time to destroy his numerous and objectionable guests.

Discarding then the vapor method, we turn to another. In considering the skin as an available atrium or portal for entering into the circulation with a remedial agent, we should not forget that a drug may be incorporated with a penetrating fatty or oily base and mechanically rubbed through the pores of the skin into the blood. This process is to be sharply distinguished from true skin-absorption, to which it bears no resemblance or relation whatever. Again, we find an illustration in an antiquated treatment of syphilis, viz., by inunction with mercurial ointment. Certain volatile drugs are known to enter the circulation by being spread on the skin without friction. This is notably true of oil of turpentine and also of several other agents which volatilize rapidly at the temperature of the skin surface. From observation of other similar remedies I cannot resist the conclusion that oil of eucalyptus when incorporated with an oily base and rubbed through the skin materially assists and supplements the process by reason of this quality. In endeavoring to use this method to the best advantage, it has been my aim to arrive at a eucalyptus ointment which would remain firm at ordinary temperatures but would melt down rapidly at the temperature of the skin surface, and above all else with a penetrating base. After many consultations with an accomplished pharmacist of this city (Dr. Wood of H. C. Barnes's drug store), to whom I am under obligations for much valuable assistance, I succeeded in getting just what I wanted. For fall, winter, and spring use the base is made up by the following formula, which of course needs to be modified for summer use:

> Olive oil, ℥ij;
> Benzoinated lard, ℥vj;
> Cacao butter, ℥iv.

Last summer I made another modification which simplifies the preparation materially for summer use, by making a liniment of the required strength with cocoanut oil. As to the proper strength for practical use a 30-per-cent ointment was first tried, but aside from the pharmaceutical difficulties in the way of making up a satisfactory preparation of that strength it was found to produce irritation of the skin in several instances, so that the strength was reduced to 25 per cent. In a fairly extensive series of experiments I have found this percentage satisfactory in all respects. It is easily made. There are no secrets of pharmaceutical manipulation. Any well-qualified prescription clerk can prepare the ointment; any country doctor

can make the liniment by simply shaking up one part of oil of eucalyptus with three parts of cocoanut oil.

The method of use is to direct that one teaspoonful of either preparation be thoroughly rubbed into the skin until it disappears, varying the locality with each application. This amount contains fifteen minims of eucalyptus oil, the major part of which reaches the circulation. In many instances the constitutional effects have been noted after one application. As to the therapeutic effects in tuberculosis, it is not my intention at this writing to give in full detail systematic clinical reports of treated cases. This paper is intended merely as a preliminary announcement, with the intent that if the simple suggestion herein contained really has any merit some of my confrères may try it at their pleasure and give their patients now in the incipient stage of phthisis whatever benefit it may afford. Detailed reports will come later.

Given then an average case of pulmonary tuberculosis in a reasonably early stage, what clinical results do we find from this measure of treatment? The most striking early effect in my observation has been a change in the character and quality of the expectoration: having been yellow, viscid, and moderate in volume, it froths up and becomes white, free, easy to expectorate, and temporarily more abundant. Then follows a reduction in the amount of sputum, accompanied as a general rule by a continued improvement in the cough. Coincidentally with these changes occurs another effect which at this stage of investigation is at least interesting, and which in the course of further experience may prove to be of considerable significance and importance. I mean this: that in every case thus far in which this measure has been introduced into the routine without other changes of treatment the temperature has been observed to run a lower and more favorable course, the change usually beginning within twenty-four hours of the first administration. Not only this, but the patient generally reports a feeling of well-being which is known to be one of the characteristic effects of the drug. So far I have not observed anything that seemed like a period of reaction. In a number of cases the usual morning depression has been notably alleviated, and in some instances has entirely disappeared.

Coming to a brief analysis of the clinical results thus outlined, I am inclined to attribute the gross changes in the character and quantity of the sputum in some measure at least to a favorable modification of the bacterial flora of the lungs. The work has not progressed far enough and has not been followed sufficiently with the microscope to justify a positive opinion on this point. On the closely related question as to the possibly destructive or inhibitory influence of the remedy on the essential germ of the disease I am still less prepared to speak finally. Two or three cases have been treated in which the diagnosis has been confirmed by the microscopic findings, and in which the clinical symptoms gradually disappeared under the treatment, and afterward a careful search through smears prepared by the antiformin method of concentrating the bacterial content failed to reveal the presence of the tubercle bacillus. The cases, however, have been too few to afford premises for a positive conclusion. Another question of some interest is whether the obviously beneficial influence of the remedy upon the cough and upon local conditions of the respiratory passages is due to the bactericidal effects of the treatment and the consequent reduction of supply of locally irritant toxins, or is due in some measure to an unexplained direct soothing or healing influence upon the traumatism produced by these same toxins. Likewise it is an open question whether the reduction of temperature is due to an abridgment of toxemia or to a primary effect upon the thermogenic centers. Large doses produce a depression of the normal temperature in animals. One observer has reported an evanescent rise of temperature following large hypodermic doses. This, however, has been attributed by the best authorities to the local irritation.

A curious and interesting bit of evidence of the prompt diffusion of the eucalyptus through the system and its elimination by

the lungs was the voluntary statement by a patient after one inunction that he could "taste the medicine in the stuff he coughed up." More than once I have smelled the oil in a specimen of sputum sent to my office next morning after the first inunction the previous night.

I have used this remedy in some far-advanced cases in which there was no hope under any kind of treatment. The immediate effects were very similar to those already described—the end results being that the patient was rendered more comfortable, and I have reason to believe the life was somewhat prolonged. I may mention as of some incidental interest the use of this preparation in the treatment of the ordinary "bad cold." This was first suggested to me by a nurse who was doing some dispensary work in tuberculosis under my direction, and who dispensed some of the ointment to several persons suffering with colds, and reported favorable results. About the same time a prescription clerk in a drug store where I had had a lot of the ointment prepared scraped up a remnant left on the slab and rubbed it into his chest, in the hope that it might benefit a rather severe attack of cold of which he had felt the first symptoms that day. Next morning he found that the cold was aborted. Many times since then I have prescribed it in similar cases, and while I would not risk whatever reputation for veracity I may have in this Academy by saying that this or anything else in my experience is a certain cure for a cold, yet I will venture the statement that in every instance it has been notably beneficial and has aborted some incipient attacks.

In conclusion, let me say that at best I realize the limitations of usefulness of the remedy which I have suggested on such scant clinical experience of its virtues. I know, too, that various contraindications will be discovered with further experiment. Irritation of the kidneys, for example, will probably develop in exceptional cases, though I have seen nothing of the kind yet. But if with further trial the simple procedure I have suggested prove to be of any service whatever in the treatment of a very intractable malady, I shall feel that I have not consumed your time and my own in vain.

FURTHER CONTRIBUTIONS TO OUR KNOWLEDGE OF THE PERNICIOUS VOMITING OF PREGNANCY.

WILLIAMS in the *Glasgow Medical Journal* for December, 1912, reaches these conclusions:

1. The underlying factor in all cases of vomiting of pregnancy is probably an imperfect reaction on the part of the mother to the growing ovum.

2. In most cases this is only a predisposing cause, while a reflex or neurotic influence is the exciting factor, and cure usually follows its removal.

3. Williams still holds to the classification of reflex, neurotic, and toxemic vomiting. Of these the neurotic is the most and the reflex the least frequent type, while the toxemic is the most serious.

4. Pronounced toxemic vomiting is accompanied by characteristic lesions and profound changes in metabolism.

5. The significance of a high ammonia coefficient is not specific. It may be a manifestation of toxemic vomiting, of starvation following neurotic vomiting, or of an acidosis due to various causes.

6. It should be regarded merely as a danger-signal, while the differentiation between the various types is possible only after careful clinical observation. If improvement does not promptly follow appropriate treatment, the existence of toxemic vomiting should be assumed and abortion promptly induced.

7. In the absence of genital lesions, a low ammonia coefficient indicates neurotic vomiting, which can be cured by suggestion and dietetic treatment, no matter how ill the patient may appear.

8. In primiparous women vaginal hysterotomy is the most conservative method of emptying the uterus. Nitrous oxide gas or ether should be used in preference to chloroform for anesthesia.

EDITORIAL.

FEEDING IN TYPHOID FEVER.

We have so frequently insisted upon the value of fairly free feeding during the course of typhoid fever that we hesitate to call the attention of our readers to this matter once more. Clinical observation would seem to indicate that many of the profession are still wedded to the old treatment which depends upon milk and broths. As we have pointed out on previous occasions, it is necessary to take fully five quarts of good milk a day if a sufficient number of calories are to be given to the patient to maintain his nutrition. This quantity of milk is practically impossible for a person who is either in health or disease, and, therefore, if the milk diet is persisted in, the patient is slowly starved while combating a prolonged infection, during which his vital resistance and his nutrition should be well maintained, if he is to recover and if he is to have a prompt convalescence.

Recent studies in this country, as we have shown in these pages, have proved that the average typhoid fever patient, with a little assistance in the way of pepsin and hydrochloric acid, can deal very well with ordinary protein and carbohydrate foods and can even assimilate moderate amounts of fat. Still more recently a very valuable paper has appeared in the *Quarterly Journal of Medicine* by Graham and Poulton from the Second Medical Clinic in the University of Munich. This research, which seems to have been carried out with the greatest possible care, provides us with additional information and makes it still more clear that feeding in all exhaustive fevers is to be more generous than we have been accustomed to resort to in the past. The title of their paper is "The Influence of Febrile Temperatures on Protein Metabolism." They point out that high temperature itself causes a destruction of the body proteids and an increased energy production, with the result that in the absence of sufficient nitrogen-free substances the proteins of the body are called upon to take a share in this production. They conclude that if a diet of ample caloric value is taken, which contains practically no carbohydrates but a large excess of protein, the fat metabolism is increased and probably protein metabolism also takes a small share in the increased energy production set up by the high temperature. If a diet of very high caloric value is taken which contains a large excess of carbohydrate but a minimal quantity of protein, non-nitrogenous substances supply the increased energy production set up by the high temperature.

We are especially interested in the last conclusions, since for a good many years we have made it a habit to feed typhoid fever patients with a considerable amount of starchy foods after the first week of the illness, and have been much impressed with the excellent results in the maintenance of nutrition which this form of feeding has produced. It would seem more rational to provide an adult, who is accustomed to a mixed diet, with approximately his normal proportions of proteins, carbohydrates, and fats, than to confine him to a milk diet for several weeks, which few patients, even in health, are able to tolerate without disagreeable effects.

THE IMPORTANCE OF TYPHOID CARRIERS IN RELATION TO THE SPREAD OF THE DISEASE.

We have more than once called attention to the importance of so-called typhoid carriers in the spread of this malady. A large number of isolated epidemics have, within the last few years, been explained by the discovery of an individual carrier—that is to say, some one who at an earlier period of life suffered from typhoid fever and entirely recovered from the manifestations of this disease still discharges in the stools hosts of typhoid bacilli. The issue of the *Australian Medical Journal* of October 12, 1912, contains a very interesting article on this subject by Bull, who is the Director of the

Bacteriological Laboratory of Melbourne University, and his assistant, Leslie Kidd. They report the case of a woman of seventy-six years who was proved to be responsible for several outbreaks of the disease, and believe that their case is of peculiar interest because they think she is the oldest "carrier" recorded. It certainly is the first case reported in Australia with complete post-mortem results.

The patient's attack of typhoid fever had occurred sixteen years before, when she was sixty years of age, and notwithstanding her age convalescence was not delayed, although she was in bed for six weeks. Of the 19 cases which she infected, 4 died, the average age of the nineteen being about twenty years. The patient herself died of gastric carcinoma. An autopsy made within two hours of death revealed a distended gall-bladder but no evidences of typhoid infection. Six inches of the lower portion of the ileum and the gall-bladder were removed and studied bacteriologically. They yielded copious growths of the specific typhoid organism.

It is evident from this and other cases that the mere lapse of time following an attack of typhoid fever does not diminish materially the ability of an individual to spread the disease. Post-typhoidal individuals should not be allowed to handle foodstuffs which are intended for others if it can possibly be prevented, and occasionally courses of treatment, extending over some days, in which urotropin or uritone is freely administered will probably prove advantageous in disinfecting the gall-bladder and intestine.

THE CAUSE OF WHOOPING-COUGH.

To the *Journal of Medical Research* for November, 1912, Mallory and Horner contribute a most important paper upon whooping-cough, describing a histological lesion in the respiratory tract which they believe to be closely associated with the symptoms of the disease. As they point out, the number of cases available for investigation has been very small, owing to the infrequency of death from uncomplicated whooping-cough early in the disease. The tissues which they studied consisted of portions of the trachea and lungs obtained at two recent post-mortem examinations and small pieces of lung from an autopsy done fifteen years ago. They believe that whooping-cough is due to a minute bacillus which exists in large numbers between the cilia of the epithelial cells lining the trachea, bronchi, and possibly the nose, and that the location of the organism is apparently characteristic of the disease. Its action, they think, is largely mechanical, in that it interferes by its presence with the normal movements of the cilia and probably leads to their destruction. This mechanical interference with the action of the cilia and their destruction prevents the normal removal of secretion, and the bacilli and the secretion produce a continuous irritation which results in coughing and in the characteristic spasm. They further believe that the bacillus they found in the lesion is probably identical with the organism described by Bordet and Gengou.

We have called attention to this interesting research not only because of its novelty but also because it, perhaps, to some extent explains the success of therapeutic procedures which have been resorted to in the past and which we have always believed are not sufficiently frequently employed. We refer to the local use of quinine in the mouth and pharynx both for the protection of children who are exposed to whooping-cough and for the relief of children suffering from this disease. The great difficulty in its employment is the bitter taste of the quinine. This difficulty can in part be overcome by the use of tannate of quinine in quinine chocolates, and, if the child is old enough to be reasoned with, this difficulty in regard to the bitterness can perhaps be overcome in a certain proportion of cases. It is possible, too, that the local application of the bimuriate of quinine and urea, which is now so largely used as a local anesthetic, will prove valuable in these cases in that destructive influence upon the microörganism described, and, in addition, in the case of the particular salt that we mention, will

produce a local anesthesia in sufficient degree to allay irritation and so prevent spasm.

AIDING THE PROTECTIVE PROCESSES OF THE BODY.

The investigations which have been made during the last thirty years as to the means by which the body protects itself from infectious diseases have revealed the fact that these means are very numerous and do not act along one single line. In some instances, phagocytosis seems to be the chief factor which the body relies upon in combating infection. In other instances, bacteriolytic substances in the serum may possibly be the chief agent. In others, antidotal or antitoxic substances are produced. In still others, by the development of fever the tissues of the individual infected are rendered a less favorable site for the growth of a microörganism, or they are able by increased oxidation processes to more readily burn up or destroy poisons which are originated directly or indirectly by invading germs. By the use of antitoxin we provide the body with a foreign antidote to the poison produced by diphtheria or tetanus, and while it is true that diphtheria toxin will pass through a porcelain filter before being mixed with antitoxin and fails to pass or passes with great difficulty through such a filter after it is so mixed, it is nevertheless a fact that neither the chemist nor the biologist can tell us exactly what toxin and antitoxin are.

When Wright brought forward his fundamental and original views concerning so-called vaccine or opsono therapy, he led us to believe that in this line would be developed the most important therapeutic advance of the century. Vaccine therapy has taken, in all probability, a permanent place as a means of combating certain diseases, but there can be no doubt that for some reason, as yet to be discovered, it signally fails in quite a large proportion of cases in which, so far as our knowledge goes, we have every theoretical right to believe it will succeed. The practical impossibility of studying the opsonic index by the general practitioner, who by this means might determine the best type of cases for vaccine therapy, heavily handicaps this line of treatment. Not only is it impossible for the average man to reach accurate conclusions as to the opsonic index, but even those who have worked with it constantly and persistently arrive at such diverse results that all but the most enthusiastic have given up the task as almost hopeless. One point in regard to so-called vaccine therapy which seems to be well assured is that it cannot be of advantage unless the body still possesses sufficient vitality to be capable of being aroused into still greater resistance to the invading organism. In other words, if the powers of resistance are so diminished that they are beyond stimulation vaccine therapy must inevitably fail and perhaps do harm; whereas if, to use a somewhat homely phrase, the powers of resistance are torpid or lazy, the use of vaccine therapy may spur them into sufficient activity to win the battle with the invading microörganism. Another cause for the failure of vaccine therapy is the almost absolute necessity of employing a dead microorganism identical with the living one which is responsible for the disease. The difficulty in obtaining a pure culture and in making an autogenous vaccine has, therefore, led to the employment of vaccines which are not autogenous in the hope that the right one might be hit upon. In other words, a very distinct and well-defined chance is taken by the practitioner who uses an autogenous vaccine, and a still greater chance by one who employs a vaccine which is not autogenous. In the latter case it is almost like the toss of a penny in determining whether good is to result or whether at least no advantage is to be gained.

In some instances, vaccines fail because the symptoms which are present are not induced by a single germ but by associated germs, each one of which is responsible for at least one color in the picture of disease, and recognizing this fact physicians often employ what is known as a polyvalent, combined or mixed vaccine. Here, again, the

treatment must be largely in the nature of an experiment, since they have no means of determining whether a single or a large number of different organisms are responsible. Furthermore, they cannot tell which organism is present in so large a majority that it is chiefly responsible for the conditions manifested. Nevertheless, these polyvalent vaccines are largely employed, and there is every reason to believe that their continued use depends upon the fact that, in some cases at least, the results which follow their employment are advantageous

When several hundred million dead bacteria are injected into the body, no one supposes that it is the dead bacteria themselves which produce the therapeutic effect, but rather substances which these dead bacteria contain. In other words, the microörganisms contain their own particular quantity of toxic material, and this toxic material being in moderate amount in a total injection spurs the protective processes of the body to increased activity.

About eighteen months ago the THERAPEUTIC GAZETTE published an article by Dr. Schafer in which he advocated the employment of what is practically an extract or filtrate of the substances contained in pathogenic microörganisms. He did not advocate the employment of any one strain of organism, but rather that the educts of a number of strains should be mixed together and used in this manner, the idea being that practically all infections are associated infections, and that while one organism may predominate, it is usually associated with a number of others in sufficient proportions to make them influential factors in the case. We did not publish this article until we had had presented to us evidence, by practitioners other than Dr. Schafer, that his method had given good results, and until so many observers had expressed this view that we felt we had no right, in view of our own lack of experience, to condemn the plan. Fully appreciating the fact that Dr. Schafer was an unknown factor in work along these lines and that his views seemed antagonistic to those generally held by the profession regarding antitoxic substances and vaccines, we appended under the title of his paper an editorial statement in which we expressed our recognition of the rather revolutionary character of the views which he advanced, the idea being that we held ourselves in no way responsible as indorsers of his opinion, but presented his statements to the profession for what they might be worth. We confess, too, that for many months after publishing his article we could not bring ourselves to the employment of the products which he advocated for the reasons that we have just given; but as time went by other practitioners reported such extraordinarily good results, by word of mouth and otherwise, that we could not fail to be impressed with the fact that the cures produced were not the result of mistaken observation or enthusiasm, and finally we employed some of these substances ourselves. We are free to admit that we have not cured every case by this means, but there can be no doubt that in some instances the results which have ensued have been no less than remarkable. Furthermore, we know of cases, notably gonorrheal rheumatism so-called, in which this method of treatment has produced a cure in an astonishingly short period of time when every other known remedy, including antigonococcic serum, has failed.

We do not believe that there will ever be a remedy evolved by the ingenuity of man which will be capable of renovating, so to speak, tissues which have been gravely damaged or totally destroyed by the fire of an active infection, any more than we believe that any one will ever be skilful enough to devise a substance which will make a decayed apple a good apple, or any more than we believe that diphtheria antitoxin or tetanus antitoxin can ever be made so efficient that after a cell has been irretrievably damaged by disease it can completely recover all of its functions. Neither do we believe in condemning any remedy reported to be efficacious by a multitude of our colleagues, even if we cannot explain how it does good.

Recently Schafer's so-called phylacogens

have been vehemently attacked, but no evidence that this attack is based on experience has been adduced. The attack seems to be based upon the theories which animated us when we appended the foot-note to Dr. Schafer's article at the time we originally published it, and the difference between our attitude then and now is that we have seen results which have forced us to cast theory aside and accept fact.

The object of the Editors of the THERAPEUTIC GAZETTE in the twenty-two years in which it has been under their control, and during which time they have been absolutely untrammelled in its control by any influence whatever, has been to present to the profession facts which would be useful to it in its efforts to relieve humanity and practice medicine successfully. We have endeavored whenever it was possible, in everything we have done, to make the practice of therapeutics rational, and to call attention to those advances in physiology, pathology, and bacteriology which explained results hitherto obtained by empirical methods. We hold no brief for any product, but there are two briefs that we hold tenaciously: The first is that we recognize that in the struggle with disease the physician should neither embrace nor condemn any measure without giving it careful consideration and endeavoring to clearly understand exactly how it can do good. The second brief is that we have no hesitation in calling the attention of members of the profession to products, when there seems to be undeniable evidence that these products do good, even if it is not as yet clear how they do good.

If an individual, or any set of individuals, by fortuitous circumstances, good luck, or research, discovers a remedy which does good in conditions in which other remedies fail, we believe that this product should be employed by the profession, not only in order that it may determine for itself how good results are obtained, but because the profession recognizes that its most sacred duty is to do the best thing for the patient.

The writer of this editorial for many years has endeavored to explain empirical practice by the results of scientific research, has constantly endeavored to carry on this work and to do all he can to make our measures rational, but no one who practices medicine actively can fail to appreciate the fact that if we used only those remedies in which accurate scientific observations tell us how they act, we would get but a small proportion of the good results which now accrue. For many years quinine was used with no scientific basis whatever. Mercury, which notwithstanding the advent of salvarsan still has a wider sphere of usefulness than that drug, is still unexplained as to its effects in syphilis, and so are the effects of the iodides. Innumerable instances of a similar nature may be cited, as, for example, the salicylates in the rheumatic diathesis and in acute articular rheumatism.

Recently a widely-read journal has asserted that physicians "have no moral right to employ remedies of whose nature they are ignorant." If by this term "nature" the origin and composition of the substance are meant, it may be possible to hold that this view is correct; but if by this term it is meant that when we have no knowledge as to how a remedy does good we should discard it, we believe it is incorrect, and if the words quoted are true, ninety-nine per cent of the profession ignore them, because they recognize that where scientific explanation for the action of a remedy is lacking, and clinical experience indicating its usefulness is present, it is their duty to resort to such a remedy, hoping, and striving, to the end that it may be placed upon a rational basis.

As Hervey well says in a recent issue of the *New York Medical Journal:* "The practice of medicine is replete with problems which depend for solution, not upon exact experiment, but upon the judgment of experience." In other words, we are forced, by lack of scientific knowledge, to use many remedial agents because they have been found curative, and every time they are employed a more accurate conception of their exact value and manner of action is approached until finally we discover their exact value. If the phylacogens are worth-

less, as some criticisms based on theory assert, they will soon go to the limbo of forgotten things; but if they do not do harm and often do great good, they will be more and more employed, because our first duty is to cure if it be possible. At present all the facts at hand point to the view that they are not cure-alls but very valuable in many cases, and until the present evidence is refuted by experience they must be given fair trial and not condemned offhand, the more so as trial so far gives good results in suitable cases and only theory condemns.

TREATMENT OF VASOMOTOR NEUROSES.

There are a number of vasomotor and trophoneurotic affections, some simulating surgical affections so closely as to lead to the performance of unnecessary, indeed harmful, operations; others calling, in their ultimate development, for amputation—all dependent on angiospasm or angioparesis. Clark (*American Journal of Obstetrics*, November, 1912) states it is now generally accepted that the vasomotor nerve passes to both the arteries and the veins; that the medullary vasomotor center exerts a toning function, which maintains a state of medium vascular contraction, modified through the blood composition and reflexly excited or depressed; that excitory and depressing fibers exist independently of each other in all sensory nerves, stimulation of excitory fibers causing rise of blood-pressure, and being elicited far more frequently than vasodilatation. When vasodilatation is obtained the subject is often in a state of general fatigue, the highest type of depressing or vasodilator action being seen after section of the sympathetic, as best typified in ear redness, heat, and swelling. If the entire spinal cord is divided the temperature rise in the extremities is sudden and marked. Stimulation by way of the vasomotor center naturally increases the work of the heart, thus setting up a vicious circle. The peripheral circulation is much more markedly modified than that more centrally seated, the different degree of development of the muscular coat of the arteries in different localities being a factor. Certain structures are hardly at all affected—for instance, the bones and the great muscular trunks, since the muscularis in these vessels is poorly developed. Ganglion cells throughout the cord make so integral a part of the vasomotor tract that when they are divided or stimulated at different levels characteristic phenomena result in the peripheral circulation.

There are also local peripheral centers, since if the entire central nervous system has been extirpated some vascular tonus remains. These are not only seen but can be stimulated by adrenalin injected into the general circulation and can be made to respond to reflex irritation.

Acroparesthesia is a peripheral sensory neurosis of middle-aged, constipated, hard-working, clothes-washing females, characterized by intermittent, usually nocturnal, subjective sensations of burning, pricking, numbness, crawling, or itching. The vasomotor complex of pallor, objective coldness, and cyanosis, with subsequent heat flushing, is seen in a small percentage of cases. The type may be regarded as an abortive form of Raynaud's disease. The prognosis is not good as far as recovery is concerned, and the treatment is mainly hygienic, the use of faradism, hydriatic measures, and particularly the cleansing of the gastro-intestinal tract.

The term akinesia algera is employed to describe the condition first formulated by Möbius, in which motion is prohibitively painful, becoming so after exertion. A mild case produces the impression of a traumatic neurosis. The pain is regarded as psychogenic.

Acute circumscribed edema, called Quincke's disease, in part a familiar malady, has no predilection for sex or age. The edemas may be submucous, subcutaneous, or articular, including tendon sheaths. The onset is acute, at times with prodromal lassitude, chilliness, nausea, etc. The edema is usually single, painless, sharply circumscribed, elastic without marked pitting, and

may be red or white. Exceptionally a whole part may be swelled, as in the leg or forearm. The lips, eyelids, and cheeks are seats of predilection, though the swelling may appear in any part of the body, least commonly in the scalp. The upper air and food passages are very frequently involved, and the resulting obstruction may call for tracheotomy. One-third of the fatal cases perish from laryngeal obstruction. Fugitive swellings of tendon sheaths, perhaps entirely unaccompanied with superficial swellings, are typical. The location in joint cavities induces a condition known to surgeons as intermittent joint dropsy. It is almost peculiar to the knee, one or both. The renal symptoms appear as paroxysmal hemoglobinuria, polyuria, and albuminuria. Headache, drowsiness, and vertigo represent central symptoms. One attack of swelling may last for one to several days. The intervals between attacks vary from weeks to years. At times there is a periodicity of recurrence.

Typical urticarial lesions are hot, red, and itchy, while typical circumscribed edema is pale, cool, and devoid of abnormal sensations; but these qualities are sometimes interchanged. The edema may be of the autotoxic or infectious origin, or familial. Milroy has described 22 individuals in six generations in which there existed from birth a solid edema of both legs below the knees, pitting on pressure, without any special inconvenience or any progressive increase of the disease.

Erythema nodosum occurring in large, firm, circumscribed swellings on the limbs should in theory be somewhat like Quincke's disease. As a matter of fact, however, it is readily distinguished, because it does not present a great variety of type, and even in doubtful cases the color-play seen during the subsidence of a lesion, which resembles that in a bruise, and is due to some extravasation of blood, is like nothing seen in Quincke's disease.

As to the treatment of Quincke's disease, attention to diet and the state of the stomach and bowels is of major import. Faradism is much preferred to any other current, and warm, dry, or moist baths are preferable to cold applications.

Raynaud's disease may be considered as a chronic vasomotor neurosis attended by vascular changes without organic disease of the vessels, chiefly seen in the extremities, but observed in the abdominal viscera.

Cassirer has shown that the largest incidence is in the first five years of life. It may rank with hereditary and familial diseases. The early stage is vasomotor, including sensory symptoms and trophic disturbances, the later necrotic represented by exfoliation of the devitalized area.

The first or vasomotor stage exhibits two types, viz., local syncope and local asphyxia. The first consists of a sudden blanching and coldness of the fingers, toes, tips of ears, or nose. There is marked lowering of temperature. The sensory troubles include both paresthesia and pain and vary greatly. The sensations may precede the vasomotor disturbances, and are usually aggravated when the latter appear. There are no true motor disturbances, only a sort of clumsiness.

Local asphyxia or cyanosis naturally shades into the local syncope. When well developed it is characterized by dark discoloration, which may be continuous or marbled. Under pressure the dark areas become white and remain so for a considerable period. There is swelling and lowered temperature. This swelling is not due to ordinary edema, but is a vasomotor phenomena akin to angioneurotic edema. There is an ultimate tendency to localized persistence of asphyxia or syncope. In some cases attacks of asphyxia or syncope occur with no disposition to lead to gangrene. In others gangrene supervenes a few days after the earlier symptoms, and this usually results fatally. Usually there is but a single attack during the cycle of invasion, which is continuous and passes on to gangrene in the course of some ten days. There seems an undoubted association between malaria and Raynaud's disease, not only as shown by personal histories, but perhaps by the marked periodicity of some cases. Raynaud's disease has

often developed in people who are victims of some chronic disease such as tuberculosis, syphilis, or chronic nephritis.

As to treatment, general hygiene, attention to the condition of the blood and the nervous system, avoidance of local trauma, and above all the avoidance of overexertion, are indicated. Hydriatic procedures have been used extensively. Ice to the elbow sometimes overcomes the vascular spasm of the fingers. Gentle massage and oil rubbings seem to give relief. Anodynes are often called for, and the coal-tar derivatives are sometimes serviceable. Gangrene is managed on the let-alone plan.

Erythromelalgia is a chronic vasomotor disorder characterized by pain, flushing, and heat, usually of one or more extremities or other parts of the body, made much worse by putting the part involved in the dependent position. It is extremely rare, is most frequently caused by exposure to wet or cold, or both, and by overexertion. Tenderness, pain, and redness of the parts are the cardinal symptoms. The pain is characteristic, tending to increase progressively until it becomes almost unendurable, especially aggravated by gravity, warmth, or overexertion. Hence posture and cold are instinctive remedies. Pain as a rule precedes the congestion, sometimes even for days or weeks. Swelling is not constantly present; if so it is transitory, constituting a sort of crisis, and is often associated with a local rise in temperature. Painful sensations are usually felt in the feet and toes. The hands are attacked about one-half as frequently, and in a fair proportion of cases all four extremities are involved. Systematic hydrotherapy probably holds out some hope of relief, as do galvanic and local baths. Theoretically neurectomy is indicated to put an end to pain. Once or twice the desired result was obtained, but in other cases there was failure, and in one case after extensive neurectomies gangrene developed and amputation became necessary.

Under the term vasomotor ataxia are classed a variety of affections sufficiently familiar to the medical practitioner. The condition is attributed to the inherent instability of the vasomotor system. The manifestations often appear in a neurasthenic, neuropathic, or hysterical substratum. Traumatic neuroses become intelligible in part from this standpoint. In the climacteric in women vasomotor ataxia is known to be commonly present. A similar condition is produced by alcohol and tobacco. Attacks vary greatly in onset, duration, and interval. Factors which determine attacks vary greatly. They may consist of mechanical, chemical, or thermal irritation, drug action, etc., aside from psychical causes. Such phenomena as "nervous chills," fainting attacks, "rushes of blood," vertigo, etc., are familiar examples. Crises of colic and diarrhea, as if from angiospasm in the region of the mesenteric arteries, profuse rhinorrhea, crises of hay-fever, inexplicable congestions of the conjunctiva, are familiar examples of paroxysmally occurring vasomotor ataxia. Intense headache may be caused by congestion of the sinuses. A characteristic subjective feeling in cerebral hyperemia is one of dread and insecurity. Cerebration becomes difficult, and the patient thinks he is losing his mind. Vertigo is present at times. In some cases the meningeal syndrome develops. Cerebral anemia is much less significant as a manifestation of vasomotor ataxia.

Another set of manifestations is seen chiefly in the retina—transient blindness and hemianopsia.

In the abdomen the phenomena are vasodilator rather than vasoconstrictor. Pulsation of the abdominal aorta associated with violent pain is very common in women, and is usually demonstrable objectively. Attacks occur in crisis. Numerous digestive disorders coexist. The crises end with vomiting. The internal congestion is usually accompanied by surface anemia, often associated with eruptions of macules and wheals, purpura, edema of the feet, or sweating of the hands. Aside from these crises much so-called nervous dyspepsia belongs in this category—the kind which comes and goes without apparent motive.

Pseudohepatic colic not infrequently develops.

In the extremities the functional intermittent limp due to angiospasm of the lower extremities is characteristic.

Scleroderma, an angiotrophoneurosis, is a familial affection to a very slight extent only; in a number of cases it has been closely associated with rheumatism. It begins as a local firm edema which does not pit on pressure. This may be fugacious or recurring, or may be so intense as to result in gangrene. This stage is followed by the indurated or hidebound one; thereafter there is a stage of atrophy, the skin remaining hidebound on a lower level than the surrounding integument. As a rule the vital organs are not compromised. There is not a single resource upon which we can surely depend to influence favorably any of the manifestations of scleroderma. In theory, retention of water should be favored.

Among hydriatic procedures those which most rouse the activity of the skin should give the best results, such as warm vapor baths. Strapping the limbs with salicylic plasters is a useful accessory to massage. Radiography and radium have been used with apparent benefit. Thyroid preparations, adrenalin, and hypophysis extract have been used, with some reported good results.

Multiple neurotic gangrene of the skin usually exhibits a prodromal paresthesia, including pain, burning, and pricking; this is succeeded by a redness, wheal, or bleb, which quickly becomes necrotic; or the necrosis may develop at once. Cicatrization takes place very slowly, and keloidal scars are common. The diagnosis is dependent on excluding artefacts.

This condensation of Clark's admirable summarization of a somewhat abstruse subject seems desirable from the surgical standpoint, since not only may needless operations be avoided by some knowledge of this subject, but many affections which the surgeon sees will at least be given a name and spared a fruitless medication. Even a distinction from infective inflammation is not always as simple as might seem, and must at times depend upon a careful history, at others upon the abrupt onset and transitory nature of many of the manifestations; again upon a complete examination covering temperature, pulse, blood picture, urine elimination, and study of all the existing symptoms. Osler has long since pointed out the angioneurotic nature of certain abdominal crises such as closely simulate obstructive or perforative lesions; these from their nature are likely to be self-limited and call not in the least for surgical intervention.

Therapeutics applicable to the various conditions described may be summarized by a careful, nay rigid, attention to all the elements which make for the most perfect health possible for the individual. Particular attention should be paid to a possible gastroenteric source. There is no medicine which seems of especial avail. For the relief of the accompanying pain neurectomy has apparently been futile. The prognosis even for life is not always favorable; for permanent cure it should always be guarded.

THE TREATMENT OF ACUTE DIFFUSE PERITONITIS BY CAMPHORATED OIL.

Two methods in combination, simple of application and now universally accepted and used, have made of acute diffuse peritonitis, at least as this term is ordinarily understood, a complication of abdominal surgery attended by a comparatively low mortality. The word "comparatively" is used advisedly, since before the introduction of these methods recovery from this complication was exceptional, whereas it is now the rule, but by no means the invariable rule. These two methods of treatment are the sitting or Fowler position, by means of which the inflammatory exudate and its contained toxins gravitate into the pelvis, and the Murphy continuous enteroclysis, by means of which elimination of the absorbed toxins is greatly expedited, death from peritonitis being essentially a toxic death.

As a further help in lowering the still distinct mortality, Vignard and Arnaud

(*Revue de Chirurgie,* May, 1912) propose intra-abdominal injections of one-per-cent solutions of camphorated oil. The oil employed is carefully sterilized by shaking a kilogramme with 300 grammes of 95-per-cent alcohol; decanting after twenty-four hours; repeating this process three times. The traces of alcohol remaining are evaporated on a sand-bath, and thereafter the oil is thoroughly sterilized by nine hours' heating, camphor in proper quantity having been added and the contained vessel having been carefully sealed to prevent volatilization. The injection is given of not more than 200 to 300 Cc. of the oil driven into the peritoneal cavity. From this dose no toxic effects are noted. The effect of the oil is to lessen or prevent peritoneal absorption and adhesions. Absorption from the peritoneal cavity is by means of the blood and lymphatic vessels. The blood-vessels absorb only aqueous solutions, together with such toxic substances as they may contain. The lymphatics absorb bacterial bodies with contained toxins. Thus experimentally whilst an intraperitoneal injection will not prevent absorption of solutions such as iodide of potassium and lactose, such an injection blocks off for a considerable time the lymphatic vessels so that if an animal be injected intraperitoneally with microbes and oil the blood remains sterile or nearly so, whilst in the control animal injected with the microbes without oil it is swarming with myriads of bacterial colonies. Thus is prevented a bacillemia, or at the worst it is greatly lessened in its virulence and intensity.

Hoehne and Pfannenstiel hold that the camphorated oil acts only as a peritoneal irritant.

As a matter of practical experience Vignard and Arnaud state that their results have been distinctly better since in addition to proctolysis and the sitting position they have given to their cases of acute peritonitis injections of camphorated oil. These injections have a pronounced stimulating effect upon the pulse and blood-pressure, prevent adhesions, render drainage efficient, stop vomiting, and reëstablish peristalsis. Though not always efficient, they are so distinctly and unmistakably serviceable that they should rank with life-saving procedures.

REPORTS ON THERAPEUTIC PROGRESS.

THE TREATMENT OF BACILLUS COLI INFECTIONS.

Hale White, in the *Lancet* of November 2, 1912, says that various treatments of the illness associated with bacillus coli in the urine have been advised, and in estimating their value regard must be paid to the great variation in the severity of the cases and to the fact that some get well without any treatment. The patient should certainly be put to bed and have plenty of fluid to drink. Those who attach much importance to the state of the intestinal tract will, if there are any symptoms that this is disordered, try to get it into a healthy condition. Alkalies have been largely used, and some think with great benefit. They are given because it is thought that bacillus coli will not grow in an alkaline fluid, but in reality it will grow equally luxuriantly in either alkaline or acid urine. Hale White's usual treatment is to give plenty of urotropin—say 10 grains dissolved in water four or five times a day for an adult, together with from 10 to 20 grains of acid sodium phosphate dissolved in water every hour the patient is awake so as to keep the urine acid, for urotropin acts by the liberation of formaldehyde in the urine in proportion as that fluid is acid. He usually also employs an autogenous colon vaccine, giving an adult from 3,000,000 to 5,000,000 for the first dose; a second similar dose is given three days afterward, and later from 20,000,000 to 50,000,000 are given once a week.

Even with most thorough treatment it is often difficult or impossible to get rid of

the microörganism from the urine, but that seems to be the very reason why every means should be taken, and therefore the writer uses vaccines as well as urinary antiseptics. Certainly patients benefit while on this treatment, although often the illness passes away, but the microörganisms remain in the urine. When this is so it may be that the bacilli having changed their character a fresh autogenous vaccine is desirable, but we must have a much larger experience before we know whether a change of vaccine causes the bacilli to disappear more rapidly than they would if vaccines were discontinued altogether after the subsidence of symptoms.

Hale White states he would like to insist that the urine should be collected with great care by means of a sterilized catheter directly into a sterilized glass bottle, which must be at once sealed air-tight. In the male, if there is strong objection to the use of a catheter, the foreskin should be retracted, the glans and meatus should be carefully cleansed with an antiseptic, and then the urine, after a little has flowed, should be passed straight into the bottle. A sterilized catheter should always be used for women, and care must be taken to prevent its end touching the vulva as it is introduced. If a catheter is not used, however carefully the vulva is cleansed, the urine may, from contact with its folds, become contaminated with bacillus coli and other organisms. It is usually preferable that the urine should be collected by the doctor and not by the nurse.

HYPODERMIC SYRINGE.

An anonymous writer to the *Indian Medical Gazette* for October, 1912, has this to say as to the way to disinfect a hypodermic syringe. He uses an all-glass syringe of the Luer type (the "glaseptic" of Messrs. Parke, Davis & Co.) and fills and empties it three or four times with chloroform, then dries it by drawing into and expelling air from it before administering the hypodermic dose. He follows this by cleaning and drying the syringe and needle with more chloroform. By this method he has never had an abscess develop in hundreds of hypodermic administrations of drugs.

ANAPHYLAXIS AND REPEATED INJECTIONS OF SERUM.

The *British Medical Journal* of October 19, 1912, says that a correspondent has raised the practical question whether a repeated injection of serum in the form of diphtheria antitoxin undertaken after a shorter or longer period is attended with any real danger, and how such dangers can best be prevented or dealt with. This practical aspect of the anaphylaxis problem is unfortunately not yet cleared up. It will be remembered that von Pirquet and Schick analyzed the symptoms which frequently follow the injection of serums, and came to the conclusion that the complex of rash, fever, and severe illness which is met with some seven to nine days after an injection is an anaphylactic phenomenon. Under ordinary circumstances the production of hypersensibility to a protein is induced by the repetition of the absorption of the same protein material, and is now ascribed to the rapid dissociation of the protein molecule. In actual practice very large numbers of human beings are subjected to injections of serum with a more or less considerable interval between the injections, and only a few have shown serious symptoms. A few deaths have been reported, notably the case closely investigated by Rosenau and Anderson.

While recognizing that the future may reveal factors which are at present unknown, it seems at present justifiable to state that the chances of a dangerous fall in blood-pressure resulting from a second injection of serum in the human subject are not great. But it cannot be denied that some risk does exist. Another matter on which the practitioner who employs diphtheria and other antitoxins, but who can scarcely find time to follow the bewildering literature on the subject, naturally needs information is what measures can be taken to prevent the occurrence of the shock, or,

if it occurs, to treat it. In the laboratory, antianaphylaxis can be induced, but how far this could be employed in human subjects has not been determined. A number of chemical substances, such as calcium chloride, have been suggested for the purpose of avoiding the shock, but it appears extremely doubtful whether reliance can be placed on these preventive measures. Anesthesia with ether holds out a much better promise, especially if the symptoms are recognized at the earliest onset and the anesthetic can be applied at once. On the other hand, the physician may to a certain extent gather from the reaction to the first injection whether any special susceptibility is to be anticipated. If there is reason to fear that such is the case the renewed application of the protein should be small, but it may be repeated in larger amounts within a short time if a marked degree of anaphylaxis is not evidenced. It must further be pointed out that this applies with equal force to bacterial vaccines, tuberculins, etc. A hypersensibility to tuberculin may be produced by the disease itself, and this accounts for the damage which tuberculin has done when applied without precautions or control.

ACCIDENTS AFTER SALVARSAN AND NEOSALVARSAN.

GAUCHER (*Annales des Maladies Venereal,* July, 1912) reports further toxic effects, some of them fatal, not only from salvarsan, but also after neosalvarsan. The manifestations were as follows: (1) Vertigo, headache, and unilateral deafness three months after three injections of salvarsan; after four injections of calomel the vertigo disappeared, but the deafness and headache remained. (2) Another case of unilateral deafness three months after three injections of salvarsan. (3) A case of death six days after the third intravenous injection of salvarsan. The patient was a young man aged twenty-one, in robust health, and the symptoms were retention of urine and coma. (4) Retention of urine, albuminuria, icterus, and uremic symptoms, which only yielded to bloodletting, in a healthy young man of twenty, who had a chancre three months previously.

With regard to neosalvarsan, Gaucher reports two cases: (1) A fatal case in a young woman, five months pregnant, who died, after convulsions and coma, two days after the second injection of neosalvarsan (0.6 gramme). (2) A case of paraplegia, occurring four days after an injection of neosalvarsan in a young girl with ocular lesions due to heredosyphilis. Gaucher considers the paraplegia due to the toxic effect of arsenic. He also reports several cases of severe recurrences after salvarsan, including the case of a man who had chancriform ulcerations in the same place as the original chancre, followed by recurrent roseola, adenopathy, mucous patches and alopecia, five months after injections of salvarsan. and six months after the first chancre.—*British Medical Journal,* Oct. 5, 1912.

THE TREATMENT OF BRONCHITIS IN THE STOUT AND ELDERLY.

In the *Clinical Journal* of October 23, 1912, CAMPBELL discusses this topic. We quote him as follows:

Let one take the case of a stout patient suffering from acute bronchitis. We are called, let us say, to see a sixteen-stone man of sixty years, in the throes of acute bronchitis. He is propped up in bed gasping for breath; his face is cyanosed and suffused with sweat, and his legs are edematous. How are we going to treat him? First of all, we must give him cool fresh air to breathe, and wheel his bed or chair (frequently the latter) to the open window. Campbell feels quite sure that any one suffering from acute bronchitis would crave to sit near an open window. Next we order a tube of oxygen to be at hand. There is no doubt that patients get comfort from oxygen; they can use it as their instinct directs. We apply a dozen leeches over the liver and encourage the flow of blood by subsequent hot fomentations. We order 5 grains of calomel, and a mixture containing carbonate of ammonium and senega.

As for the edema, the most effective way of getting rid of it is by means of digitalis and theocin sodium acetate (5 grains ter die).

As regards food, it should in all cases of this kind be practically withheld altogether for a few days at least. Campbell lays great stress on this. He states he knows of no more fitting inscription for a hospital devoted to diseases of the chest than this: "In all cases of acute dyspnea *starve* the patient." Many lives are sacrificed through ignorance of this common-sense precept. Every particle of food which is absorbed goes to increase the production of carbonic acid, and it is the excess of this in the blood which causes the dyspnea. We need not fear any ill results from withholding food for days together. It is not easy to kill a patient by starvation. We know that professional fasters can go without food for forty or even fifty days. Now these men are not obese. Campbell sees no reason why a very fat man should not live as long without food as a very fat pig, which can live for several months without food.

One need have no hesitation about withholding food for some days from the stout bronchitic patient who is in danger of suffocation. No food should be given to any patient who has acute dyspnea, above all if he is obese. It is strange that the physician has so long overlooked the fact that every particle of food which is absorbed into the blood, and not laid down as tissue or run out as albumen or sugar, is catabolized and causes an immediate increase in the production of carbonic acid, the excess of which in the blood is the essential cause of the dyspnea. If we feel we must give the patient something to satisfy him or his friends, let it be a little beef-tea. If we cannot persuade him to put up with this, then let him have a small portion of minced underdone lean meat. This is little likely to produce flatulence, which necessarily tends to aggravate the dyspnea.

The patient may drink as much water as he likes, or he may have weak China tea. Unless he is a hard drinker, in which case the sudden reduction in the usual daily allowance of alcohol may induce delirium tremens, Campbell advises that little or no alcohol be given.

Let us now consider the treatment of chronic bronchitis in an obese subject. Bearing in mind the chief factors in the causation of bronchitis—irritation of the bronchial mucous membrane (either by the inhalation of impure air or the circulation of impure blood) and sluggishness of circulation—we are careful that the air the patient breathes shall be as pure as possible, and we endeavor to bring about a vigorous circulation of healthy blood throughout the body.

As regards climate, a pure, dry, warm air is the best. Cold air is not in itself bad for the lungs—it has rather a stimulating effect. The injurious effect of cold climate, especially a cold, damp climate, on the respiratory mucous membrane depends upon its unfavorable effect on the skin. The skin excretes less actively in a cold damp than in a warm climate. Now the respiratory mucous membrane and the skin are to some extent complementary to one another, and if the action of the skin is checked, much of the poisonous material which is normally eliminated by it is got rid of by the respiratory membrane, which in this way may be irritated into inflammation. The bronchitic therefore does best in a warm, dry climate. A warm climate is, moreover, favorable to open windows and outdoor life, whereas a cold one tends to keep the patient in dusty, and perhaps stuffy, rooms.

Our second object—the promotion of a vigorous circulation of healthy blood—is secured by common-sense means. We start at once to get the patient down to his normal weight. This is a very simple matter and does not require the services of a specialist. We have recourse to diabetic diet and prescribe a due amount of exercise. By these simple means we shall do much not only to stimulate the circulation, but to improve the quality of the blood. The digestive organs should receive special attention; the healthier they are the purer the blood. The withdrawal of starch and sugar is often followed by a considerable improvement in digestion and a reduction in the generation

of poisons, which by their absorption into the blood exercise so injurious an effect upon the bronchial mucous membrane. Such starch as we may be disposed to allow should be chewed very thoroughly, so as to secure, as far as possible, its predigestion in the buccal cavity. In this way much of it may be converted into dextrins, and some of it even into maltose, before it reaches the stomach.

A favorite plan of Campbell's is to order the patient a grain of gray powder and a teaspoonful of castor oil (in the form of a tasteless emulsion) every night for some months, or, instead of the oil, we may find it better to give half an ounce to one ounce of petrolatum liquidum.

As regards expectorants, alkalies and ether are probably the best. The part of expectorants in the treatment of bronchitis is, however, a subsidiary one. Too great reliance has been placed upon them in the past to the neglect of common-sense measures. Bronchitis has never been cured by drugs, any more than dyspepsia has, but it often yields to common-sense treatment, and no variety more so than the chronic bronchitis of the elderly stout person. There is a danger that as we become more scientific we may neglect the more prosaic dictates of common sense. Let us beware lest in our enthusiasm for modern scientific methods we neglect the obvious. This much Campbell asserts he can assure us—we will do more for the obese bronchitic patient by reducing his weight, tending his digestion, and regulating his exercise than by any other measures, scientific or otherwise.

CHLOROFORM TOXEMIA.

Nuthall writes quite an exhaustive article in the *Birmingham Medical Review* for November, 1912. He says the conclusion of the whole matter, as it would appear from clinical experience and research, may be shortly stated thus:

1. Never administer chloroform if etherization be possible, even to children or pregnant women.

2. Avoid carbohydrate starvation, or any other form of starvation, before operation.

3. If chloroform must be used, administer dextrose or bicarbonate of soda freely for days beforehand, especially if the patient be young or his condition septic.

4. If post-chloroform poisoning develops, administer freely soluble carbohydrates (dextrose) and bicarbonate of soda, in the worst cases injecting the dextrose into the subcutaneous tissues and rectum, or even intravenously.

TREATMENT OF EARLY CARDIAC COMPLICATIONS OF RHEUMATISM.

Lees in the *British Medical Journal* of October 12, 1912, writes ably on this topic. His proposition is that whenever a patient who is found to have a dilated left ventricle has also symptoms which are certainly rheumatic or are even possibly caused by a rheumatic infection, it is the duty of the practitioner not merely to keep the patient at rest in bed, but also to submit him to a careful but thorough antirheumatic medication. This is specially necessary when the patient is a child. Sore throat, pains in the joints, muscles, or tendons, erythema, arthritis, subcutaneous and subperiosteal nodules, pain in the chest, shortness of breath, marked pallor, and choreic movement (however slight), are all symptoms more or less strongly suggestive of rheumatism and demanding an antirheumatic medication.

About the precise method and extent of this antirheumatic medication there will no doubt be much difference of opinion among those who take part in this discussion. Let each writer state fairly the results of his own experience, that those who have employed different methods may learn how others have succeeded.

Lees' own experience has led him to the conclusion that sodium salicylate conjoined with sodium bicarbonate, in the proportion of one part of the former to two parts of the latter, is a most effective antirheumatic medication, if the dose is gradually increased to a sufficient extent.

There can be no doubt that sodium salicylate has a specific action against rheumatism as marked as is that of quinine against malaria, or as that of mercury or salvarsan against syphilis. Since its introduction into practice it is no longer true that acute rheumatism requires "six weeks" for its cure. We no longer see in hospital wards the profusely sweating, sour-smelling patients with intensely painful rheumatic arthritis whom some of us remember in our student days; and rheumatic hyperpyrexia has become a very rare phenomenon. The rapid subsidence of rheumatic arthritis under the influence of salicylate is universally recognized. This is clearly a specific action, for the drug has no such marked influence on a tuberculous, a gonococcal, or a pneumococcal arthritis. Now if the cure of the arthritis is due to a specific action of the drug, it seems clear that this action cannot be confined to the joints, but will be exerted to a greater or less extent in every tissue in which the rheumatic microbes are doing their deadly work. The addition of sodium bicarbonate probably counteracts the acid toxins (formic acid and probably also acetic, according to Walker and Ryffel), and it assists in producing an improved tone of the cardiac muscle, in accordance with the observations of Gaskell on the effect of perfusing the isolated frog's ventricle with sodium hydrate. The combination of these two drugs exactly meets the needs of the rheumatic heart. In this respect sodium salicylate has a marked advantage over aspirin, which must not be combined with an alkali.

Comparatively small doses of salicylate will reduce the pyrexia and cure the arthritis of rheumatism, but if we attempt to ascertain whether larger doses of the drug have any beneficial action on the heart we are met by two difficulties. The first is that the rheumatic infection itself is very depressing to the heart, and that thus it is easy to make the mistake of attributing to the remedy symptoms which are really due to the disease. Hence has arisen a widespread impression that salicylate is a "cardiac depressant." This idea seems to be devoid of any real basis, as far as the "physiologically pure" salicylate now used is concerned, whatever may have been the case at the time when a less pure drug was employed. The second difficulty is the fact that certain unpleasant symptoms are undoubtedly caused by salicylate, such as vomiting and tinnitus, and that some individuals are much more prone to these side-effects than others.

Yet in the great majority of cases this difficulty may be overcome by a proper method of administration. If, when symptoms such as vomiting or tinnitus occur, the medicine is suspended for a few hours, and is then given again in smaller doses than before—half or two-thirds of the former dose—it will usually be found that the unpleasant symptoms pass away, and the dose can be raised to a considerably larger amount without causing their recurrence. If they do recur, another pause, followed by a reduction, will usually be successful. In this way it is possible to train almost all patients to tolerate much larger doses of the drug than those generally administered. Of course, it must be allowed that some patients are specially susceptible to salicylate, as others are to quinine, iodine, mercury, or opium. Yet it remains true with regard to the great majority of cases that by adopting the method above described the dose of salicylate can with safety be increased to a very considerable amount. In a rheumatic attack it is often desirable to increase the amount of salicylate to 150 or 200 grains per day, with double the amount of sodium bicarbonate, given in ten doses. It may be desirable to increase the amount still further, even to 350 or 400 grains. The largest dose Lees had ever given was 60 grains ten times daily, in the case of a boy of sixteen who had an enormous crop of rheumatic nodules, about 250 in all, with pericarditis, endocarditis, dilated heart, and moderate arthritis. The maximum amount of 600 grains of salicylate and 1200 grains of bicarbonate was given for two days. The dose had been gradually increased to this amount without any difficulty. After this he took 500 grains of salicylate and 1000 of

bicarbonate for six days a week for three weeks. The amount was then gradually reduced. Every one of his nodules disappeared under this treatment, his pericardial friction soon vanished, his heart became smaller, and he left the hospital with merely a short presystolic and a short systolic murmur at the apex. He has since then been in the hospital for a short time with a very much milder rheumatic attack.

Cases of chronic rheumatism in adults, with subacute exacerbations, which show no sign of improvement under 200 or 300 grains of salicylate daily, will sometimes be definitely cured when the amount is raised to 450 or 500 grains.

We may reasonably expect that when rheumatism affects organs like the heart or brain a larger amount of the remedy may be necessary than is required for the cure of more superficial structures. Who would expect to cure a visceral syphilis by 5 grains of iodide given three times a day? It is well known that much larger doses are required, and they are freely given, though with adequate caution. Yet even in this case one finds sometimes that one has not gone far enough for success; a yet larger dose cures the patient. A man under Lees' care at St. Mary's had pains apparently due to a pachymeningitis, possibly traumatic in origin, but also possibly syphilitic. Iodide to the amount of 30 grains three times a day was given without success. The case was transferred to a surgical ward for surgical consideration, and his colleague, Mr. Page, cured him by increasing the dose of iodide, he believes to 100 grains three times daily.

To give a small dose of iodide to a case of cerebral syphilis is to prove oneself an incompetent practitioner. Shall we not, then, expect that if we are to cure a case of cerebral rheumatism such as we describe by the absurd designation of "chorea" we must be prepared to use large doses of the specific remedy? We have not given the drug a fair chance unless we have increased the amount to 400 or 500 grains daily. The small doses ordinarily given are absurdly inadequate; and in chorea we must remember that time is a necessary factor of the cure because of the damage to the cortical cells, so well described by Dr. Carey Coombs.

In commencing the treatment of a rheumatic case by salicylate, it is desirable to give comparatively small doses for the first twenty-four or thirty-six hours. If too large a dose is used at first, there is a possibility that by the rapid death of many of the microbes so much of their internal toxin may be released into the blood as to cause an injurious effect, such as increased acidosis and a tendency to delirium; but after about thirty-six hours the amount of the drug should be rapidly increased. It is desirable also, since the rheumatic infection probably enters in most cases by the tonsils, to spray the throat three times daily for the first week with a solution of perchloride of mercury in glycerin and water, of the strength of 1 in 2000.

Two precautions must be constantly kept in mind during the treatment of a rheumatic attack by salicylate, especially when the patient is a child. The first is that special care must be taken to prevent constipation. Dr. Langmead has rightly insisted on the importance of this, and Dr. Miller has suggested that it is wise not to increase the dose of salicylate for a child on any day unless the bowels have acted previously on that day. The second precaution is to remember the necessity of constantly keeping the patient's urine neutral or slightly alkaline in reaction. It is surprising how much sodium bicarbonate may be required to effect this in a rheumatic child.

By the careful observance of these two precautions the patient is secured against the possible occurrence of acidemia and its sequence of air-hunger, drowsiness, and coma. In the only fatal case that Lees has seen the dose of salicylate was very small—only 5 grains four times daily—but it was given without any bicarbonate, and by an oversight the medicine was continued for ten weeks; also at that time the importance of preventing constipation was not recognized. Under the much larger doses which he has employed, in conjunction with twice

as much sodium bicarbonate, there has rarely been any indication of the approach of these symptoms of acidemia. In the few cases in which anything of the kind has been observed it has always been quite easy to arrest them by giving up the salicylate for a short time and increasing the bicarbonate as much as might be necessary to render the urine alkaline.

Sodium salicylate is not the only drug liable to produce acidemia. Lees has seen air-hunger and coma in a child produced by a dose of 15 grains of aspirin three times a day after only seven such doses had been taken. Fortunately the meaning of the symptoms was realized, and under alkaline treatment the child recovered completely.

The writer's last proposition is that in cases in which the initial rheumatic attack on the heart is of great severity, where great dilatation is accompanied by evidence of pericarditis or of marked endocarditis, very great relief may be obtained by the local application of an ice-bag over the heart, provided that care be taken to keep the feet and lower limbs warm by means of hot-water bottles. Efficient nursing is of course essential, and the temperature should be taken every two or three hours. Before the ice is applied, if the dilatation of the right side of the heart is marked, it is often desirable to apply a few leeches over the false ribs on the right side. If these precautions be adopted the ice-bag may be used without fear. It rapidly relieves local tenderness, causes a congestion of the superficial vessels as marked as that resulting from a poultice, and appears to exert a markedly tonic effect on the cardiac muscle. Pericardial friction under its influence rapidly lessens, the dilated left ventricle diminishes, and pericardial fluid tends to be absorbed. One can often trace a beneficial effect even on an endocarditis, judging from the changes in the character of the murmurs.

In later rheumatic attacks, where the heart is already much crippled by former myocarditis, endocarditis, and pericarditis, the same therapeutic measures are available, but they must be more cautiously employed. Leeches will almost certainly be necessary, and cardiac tonics such as strychnine, digitalis, and oxygen may be very useful.

The specific antirheumatic medication ought not to be suspended on account of the existence of pericarditis, as was formerly taught. This teaching was based on the belief that sodium salicylate was a cardiac depressant. But, in fact, it is the rheumatism which is the depressant, partly by its action on the cardiac muscle and partly by the reflex influence of pericarditis. In cases of pericarditis of rheumatic origin, the antirheumatic medication is specially necessary. Along with the local action of ice (and possibly of leeches) it will be found to produce the most remarkable therapeutic effect.

Possibly some of those who follow Lees in this debate will consider this method of treatment rash and dangerous. He asserts he can only reply that it has been tested by experience, and has been found most helpful. But let no one adopt it without the safeguards which he has described. He asks, is there no danger in too great timidity of therapeutic action? His firm belief is that at present sins of omission in the treatment of early cardiac rheumatism are responsible for an enormous amount of disastrous result which might easily be prevented by a wise and cautious boldness.

RECTAL DISEASE AN IMPORTANT CAUSE OF PRURITUS ANI.

CROOKALL in the *Medical Sentinel* for October, 1912, gives the following suggestions as of value in handling an inveterate case of pruritus ani:

1. Make sure the pruritus does not come from some skin disease such as eczema, erythema, etc.

2. Eliminate parasites, such as threadworms, from the intestine and externally pediculi and tricophyton.

If the above findings are negative, the cause of the trouble is very liable to be found in the rectum.

3. Examine the interior of the bowel, paying particular attention to the area at the anorectal junction.

4. Regardless of any other treatment, take care of the hypertrophied external skin with silver nitrate, citrine ointment, or similar acting preparations.

5. In case no cause can be found and the disease is of many years' standing, we are justified in performing the operations of Ball or Krouse for the division of the anal nerves, as occasionally cases will be found in which the rectal disease has recovered, leaving the external skin condition as a distinct entity.

Crookall has had one case of this kind in which the disease was of over forty years' standing.

TREATMENT OF GASTRIC ULCER.

In the *British Medical Journal* of October 12, 1912, DAWSON has this to say of the medicinal treatment of gastric ulcer:

Keep the alimentary tract clean and healthy; keep gums and teeth from sepsis; treat tonsillar and nasopharyngeal infections. It needs to be emphasized that there is all the difference between action and evacuation of the bowels. Fecal stasis is consistent with regularity in defecation. An infection may start high or low in the tract—a low-grade gastritis, colitis, or appendicitis, or one may follow the other. Reasonable feeding is important, because it enables stomach and intestine to functionate well. The gastritis associated with mucous ulcer is of a toxic character, and there is no evidence that the irritative gastritis—say of tea and alcohol—carries with it any special proneness to ulcer.

Our diagnosis of mucous ulcer from the gastritis which accompanies it is of no practical moment, for the treatment is the same. The danger lies in missing an ulcer which is becoming chronic or one that is threatening to perforate. The points to pay attention to are the persistence of pain and tenderness after the patient has been put to bed and the history of previous illness. In mucous ulcer and gastritis the symptoms disappear quite quickly, and light solids and even iron are tolerated in a few days; whereas if there is an ulcer becoming chronic, the tenderness and pain and intolerence to solid food persist longer, and there will often be a history of previous attacks.

The response of the mucous ulcer to treatment is a contrast to that of the chronic ulcer. The great thing is rest. With this, with milk or light solid diet, with the treatment of the cause, and with bismuth and soda for a few days, followed by iron and arsenic, the cases respond promptly—so different from the difficulties with chronic ulcer.

As to chronic ulcer, it may be said that whatever be the cause of the ulcer, it is abundantly clear that acidity of gastric juice plays an important part both in its production and its continuance. An essential element in its treatment therefore is to remove the causes of excessive acidity, whether those causes in any given case reside in the stomach or outside it. It is further necessary to prevent the accumulation of acid, especially when there is no food in the stomach, or, failing this, to bind or neutralize it. There is no doubt that an ulcer on the road to healing will be set back by a bout of acidity. The pain that will sometimes awaken a patient at night is a symptomatic expression of this fact.

The motility of the stomach is seldom diminished, sometimes the reverse—for example, duodenal ulcer. The aim should be to limit its movements to what are required for the voiding of food and gas.

Rest of body in bed will rest the stomach, for thereby movement is diminished, and the food requirements are lessened.

The food must be such as to produce the least stomach effort. Milk (except in individuals who do not tolerate it) is the best to commence with, and it should be continued for three weeks. Eggs may be given with it. After three weeks the diet may be extended. Food must be finely divided and easily digestible, given in small quantities every two to three hours, with a dose of alkali at the intermediate hours. This will provide for the day, but the stomach must not be left to itself at night, or acid will form, pyloric spasm will be set up, and the

healing work of the day will be undone. A dose of alkali (pulvis dyspepticus, consisting of bismuth carbonate, sodium bicarbonate, and magnesium carbonate) before going to sleep, and even food or alkali in the middle of the night, may be desirable. Sometimes food alone is sufficient, but—keep down the stomach acidity at night.

Every physician should be acquainted with the rationale of operative treatment, and should be jointly responsible with his surgical colleague for its employment. It follows that the principles underlying an operation, as distinct from its technique, are within the sphere of a physician, and therefore proper in this discussion.

Where there is a structural narrowing at the pylorus the indications for gastroenterostomy are as clear as the mode by which it gives relief. In no other gastric condition does the operation give such excellent results. Here Dawson urges that structural pyloric stenosis should not await diagnosis till such obvious signs as visible peristalsis and bulky vomitings have put in their appearance. Careful routine examination, including such means as test supper, inflation, and the bismuth meal, will usually disclose the condition.

When there is no structural stenosis the way in which gastroenterostomy helps is not so clear. Some say that for such conditions as ulcer of the duodenum and the lesser curve it is unsound treatment. Arbuthnot Lane holds this view.

Dawson thinks the facts definitely show that chronic ulcers, wherever situated, are benefited by short-circuiting, though cure can be spoken of with more confidence where the ulcer is near the pylorus than elsewhere. Some results recently published in the *Lancet* by Sherren speak eloquently as to the efficacy of the operation.

The reason why gastroenterostomy is more successful now than it was is not only because of improved technique, but because—unlike formerly—it is only done in suitable cases to achieve clearly defined objects, and not as a thoughtless remedy for any intractable gastric case.

AMEBIC COLITIS: DIAGNOSIS AND THE EMETINE CURE.

Rogers in the *Lancet* of October 19, 1912, gives these directions for the examination of the feces for the amœba dysenterica:

In a large majority of amebic dysentery cases the pathogenic organism is easily and quickly found on examining a drop of the blood-stained mucus thinly spread out under a cover-glass with an ordinary high power, such as a 1/6-inch lens. Thus, out of 50 consecutive cases of which he has notes, in 42 per cent the amebæ were noted as being "very numerous," which means that they were present in nearly every field of the microscope and were found immediately; in 48 per cent they were "numerous"—that is, they were found by a search of two or three minutes' duration; in 4 per cent they were "few" and found after a longer search, and in an equal number they were "very few," and only detected by the special procedure to be described; while in one case they were not seen during three examinations of the stools, although a subsequent post-mortem examination revealed the presence of a very chronic amebic ulcerative colitis. In four of the above cases the parasites were not found at the first examination, but were numerous in three of them at a second attempt, usually on the following day, and few in the remaining one. It thus appears that in 90 per cent of the cases the organisms were very readily found after one, or occasionally two, examinations, the procedure being far easier and quicker than the hunt for malarial parasites.

Much has been written on the differences between the harmless amœba coli, with its lack of clear ectoplasm, well-defined nucleus, and small size, and the pathogenic amœba histolytica, with the opposite characters and frequent inclusion of red corpuscles on its substance. In Rogers's experience of examinations of dysenteric stools the former is so rarely met with that from the practical point of view it may be safely neglected, and he agrees with Craig in thinking that whenever amebæ are found in diarrheal or dysenteric stools they may

safely be regarded as pathogenic and their hosts treated accordingly. That this is a safe practical rule will be clear, from the simple fact that among 33 consecutive cases of dysentery under his treatment subsequently to his commencing the emetine treatment, in 24 amebæ were found, and in all of these, except two nearly moribund cases, the dysenteric symptoms completely cleared up within two to four days; while on the other hand in none of the remaining non-amebic cases did the drug have any material effect on the progress of the disease, although it never appeared to do any harm. The effect of the new treatment, therefore, furnishes a very reliable clinical differentiation between the two types of dysentery, which is by no means the least of its advantages.

A rapid method of detecting amebæ when present in scanty numbers: Although as a rule it is very easy to find the amebæ owing to their numbers, in the exceptional cases in which they are very few the following technique will be of great assistance. French writers in particular have advised the addition of a drop of one-per-cent watery methylene blue to a piece of dysenteric mucus, as it stains the pus and epithelial cells at once, while for a time the amebæ resist taking up the stain and also retain their activity. They thus stand out clearly amid their blue surroundings as light refractile motile bodies, and are readily detected even if comparatively few are present. Recently Rogers has found that with a little practice it is possible to detect them in such a preparation examined directly after it is made with a very low power, such as a Zeiss A or a half-inch lens, a higher power being turned on to verify the find. With some practice they may also be seen with the same low power in unstained mucus as small glistening particles, the condenser being fully lowered for this method of examination, and any find being further scrutinized by a 1/6-inch lens. By these means a fair-sized piece of mucus thinly spread under a full-sized cover-glass can be completely searched within a very few minutes, while a second piece should be examined before a negative result is recorded, and if necessary the examination repeated on the following day.

It is also important to note that full doses of ipecacuanha or emetine should not be given before the stools are microscopically examined, or a negative result is likely to be obtained in amebic cases, just as in malaria after quinine has been taken. The stools should also be examined as fresh as possible, preferably within an hour or so of being passed. In Lower Bengal no artificial warmth is necessary, but in colder places the specimen may be kept at blood heat for a short time and the slide warmed. The organisms should always be seen in active motion before a positive diagnosis is made, for there are often large mucoid cells present, especially in bacillary dysentery, which may easily be mistaken for inactive amebæ by the inexperienced. Staining with the iron-hematoxylin method will enable amebæ as well as their young budding forms to be recognized, but is seldom necessary. Small oval flagellated trichomonads are often seen in addition to amebæ, and also disappear under ipecacuanha or emetine.

Rogers makes a comparison of the ipecacuanha and emetine treatments. He has already recorded some striking cases illustrating the curative action of emetine salts in amebic dysentery and hepatitis. In the latter condition half-grain doses of the hydrochloride hypodermically once or twice a day very rapidly relieve the acute pain and tenderness and stop the fever, while if suppuration has not yet occurred the leucocytosis also soon disappears and the patient is convalescent. If the increase of the white corpuscles continues there is probably a collection of pus in the liver. This should now be removed by aspiration and one grain of the soluble emetine salt, dissolved in about one ounce of water, injected into the cavity before the cannula is withdrawn and the puncture sealed with collodion. Subcutaneous emetine injections should be continued for several days to kill any amebæ remaining in the wall of the abscess or of the large bowel, and if there is no secondary bacterial infection of the

abscess, and it is still confined to the liver substance, it will nearly always dry up without further trouble, incision and drainage being usually unnecessary. If the cavity is a very large one the aspiration may have to be repeated, as in an old debilitated subject from whose liver Lieutenant-Colonel A. H. Nott, I.M.S., recently removed 80 and 45 ounces of pus by aspiration at ten days' intervals, and who recovered perfectly under the emetine treatment just mentioned. There is good reason to hope that the open operation will in future be only exceptionally required in the treatment of amebic liver abscess, greatly to the comfort of the patient.

In order to show the precise value of the emetine treatment of amebic dysentery to be estimated we now require a consecutive series of unselected cases, which can be compared with a similar series treated by the recognized ipecacuanha method. Such data are now available regarding 54 cases under Rogers's care in the isolation ward of the Calcutta Medical College Hospital, and the most important facts concerning them are briefly summarized in the following table, which includes 30 consecutive cases treated with ipecacuanha, and 24 in which emetine was used so as to allow of their ready comparison.

A Comparison of the Ipecacuanha and Emetine Treatments.

	Ipecacuanha.	Emetine.
Died from dysentery within 3 days of admission	4 cases.	2 cases.
Died from dysentery over 3 days after admission	7 cases.	.....
Died from other disease after cure of dysentery	.....	2 cases.
Removed from hospital in very bad condition	2 cases.	.....
Left hospital unchanged or not cured	4 cases.	.....
Cured	13 cases.	20 cases.
Average days in hospital of cured cases	16.4	7.2
Average days before stools became normal	11.4	2.35
Average grains of ipecacuanha or emetine to that time	406	2.0

Many of the cases in both series were admitted in a very bad condition, a considerable proportion being chronic attacks of from one month to over one year's duration. The cases which died within less than three days of admission are shown separately in the first line of the table, as they came under observation in a practically hopeless condition, so that it will be fairest to omit them in calculating the failures of either form of treatment. On the other hand, the two cases shown as removed from hospital by their friends in a very bad condition should be included as deaths, as there was little or no chance of their recovery. This would leave nine deaths out of 26 cases, or a mortality of 34.6 per cent in the ipecacuanha series, against no deaths due to dysentery among the non-moribund cases treated by emetine—a highly satisfactory result. Of the two patients entered as dying from other diseases after cure of the dysentery by emetine, one succumbed to heat-stroke several days after, being quite free from bowel trouble, and the other, a dropsical and very anemic subject, developed cancrum oris, which proved fatal ten days after his dysenteric symptoms had finally developed, both conditions indirectly due to the extreme feebleness of the patients after two and seven months' dysentery respectively. It is also noteworthy that none of the emetine patients left the hospital uncured, although six of the surviving 19 ipecacuanha series declined to continue the treatment and had to be discharged. Once more, the average duration of the ipecacuanha treatment up to the time the blood and mucus finally disappeared from the stools in the recovering patients was 11.4 days, and their total stay in hospital 16.4 days; while under emetine salts the corresponding figures were 7.2 and 2.35 respectively. Lastly, the average amount of ipecacuanha taken before the stools became normal was 406 grains, and further considerable amounts were administered to most of them before their discharge from hospital. On the other hand, the average amount of emetine required for the cure was 2 grains, being equivalent to 180 grains of ipecacuanha, some of them receiving further small doses, so that the new method is also an economical one, especially if the time in hospital is taken into account.

As to the methods of administration and dosage of emetine salts, Rogers asserts he

now always uses the hydrochloride of emetine, as it is much more soluble than the hydrobromide, the latter requiring about 2 Cc. of water to dissolve a full dose, and is then liable to become deposited as crystals in the capsules, but is readily redissolved by gentle heat. The hydrochloride can now be obtained from the leading manufacturing chemists either in tablets, suitable for hypodermic use, or already dissolved and sealed in glass ampoules. In adults he now seldom gives less than half-grain doses, and prefers two-thirds of a grain, equal to 60 grains of ipecacuanha, twice a day for the first two days in severe cases, and then once for another day or two, which is usually sufficient for a cure. Solid food is begun in the form of soft rice and other farinaceous forms on the fourth day, and Indian patients can seldom be induced to stay in hospital over a week unless very debilitated on their arrival.

As the hypodermic method is not always convenient in practice in India, he has tried giving one-third of a grain tablet by the mouth on an empty stomach, and finds that two-thirds of a grain can generally be taken without producing any material sickness and with much more favorable results than with ipecacuanha by the mouth, although the action is slower and less effective than by the hypodermic method, and in one patient blood and mucus reappeared in the stools after three days' absence, although he had taken a total of two grains by the mouth, but all symptoms finally vanished after two more days on hypodermic doses. In children of about seven years of age he found one-third-grain doses of emetine subcutaneously are well borne and rapidly effective, even in very chronic cases, while in severe cases in adults he has frequently given a grain at one dose and repeated it in about twelve hours, and has not yet seen any toxic effects.

Does the emetine treatment produce a complete and permanent cure? Rogers has already recorded two cases in which death took place from multiple abscesses of the liver and gangrene of the cecum respectively, very shortly after emetine treatment had removed the dysenteric symptoms, in both of which microscopical examinations showed a complete disappearance of the amebæ from the bowel and liver tissues, although they had been abundant in the stools on admission. The important question remains as to whether a few of the parasites may not survive and subsequently bring about a relapse, just as in malaria, trypanosomiasis, and syphilis respectively, after quinine, atoxyl, and salvarsan treatment. In order to solve this problem Rogers has been endeavoring to follow up his patients after they leave the hospital, and has either seen or heard from several of them some weeks after their discharge.

THE USE AND ABUSE OF THE THYROID IN OBESITY.

JUMP in the *Pennsylvania Medical Journal* for October, 1912, tells us that formerly, owing to the lack of standardization in the preparations of the gland on the market, there was a considerable amount of confusion, even among physicians, as to its proper dose. For instance, one maker's preparation was about the strength of the present official preparation; another's was two and a half times as strong; another's five-sixths as strong. This is changed now, and we have the official glandulæ thyroideæ siccæ, one grain of which represents five grains of the fresh gland, and practically all pharmaceutical houses follow this standardization. The glands in different animals vary in strength of iodothyrin, the active principle, but where many are used in making the official preparation, the rich will average with the poor, and one may be assured of a fairly constant standard product from the laboratories of reputable manufacturers.

From the nature of this agent a putrefactive change may take place in it, and to this may be given the credit for some of the evil effects seen in the administration. Therefore the thyroid must be considered a powerful and dangerous remedy for two reasons: First, because of its marked tendency to injure muscles; secondly, because

of its indeterminate action on the heart. The gland is a dangerous agent, and so are morphine and the coal-tar analgesics; none of these can be used carelessly nor in big doses, nor by the laity without supervision. Indeed, any useful drug may become harmful if abused. But in spite of the results which may occur, Jump believes there is a distinct indication for thyroid feeding in certain cases of obesity. It is in the endogenous or constitutional or thyrogenous obesity, where there is a small or inactive thyroid and poor catabolism, that it is most useful. It may also be given, with care, to the obese individual who is too fat to exercise, in order to reduce his weight to a point where he may exercise. Because of its diuretic action and its effect in checking the progress of arteriosclerosis and its destructive action on effete products, it ought to be of peculiar value in cases of interstitial nephritis in which the patients are too fat. He has had under his care, for some time, two such men, who have been kept in fairly good condition by this treatment.

It is well to begin with small doses of a fresh preparation of the dried gland, one-half to one grain three times a day, and gradually increase it, being watchful for the first signs of intolerance. The diet must contain an increased quantity of proteids, in order to save the tissue proteid, and a decreased quantity of carbohydrates to prevent glycosuria. While exercise may be dispensed with (the catabolism produced by the gland taking its place), it is valuable, in that it trains the patient in this important particular. It is necessary, of course, that the patient be under constant observation; he must not be allowed to use the remedy without advice. If, during its administration, the pulse rise above 100 and the patient complain of breathlessness and weakness, it should be stopped at once and small doses of arsenic given until the condition is relieved. It may then be started again at a smaller dose. When the treatment is stopped the patient may relapse into his former condition if, at the same time, he relax in his diet and exercise; but this same result obtains in any other cure. Most of the cases will require periodically recurring treatments, just as is the case in myxedema and cretinism.

In conclusion, Jump states that while this remedy must be put in the dangerous class, he can quote Sajous, who has said of thyroid in another relation, "There is no agent at our disposal whose effects can be controlled more accurately, if watched, and fresh preparations used."

CHEMICAL STRUCTURE AND PHARMACOLOGICAL ACTION.

Although the changes undergone by any substance within the animal body may differ from those which occur in a test-tube, and difficulties may thus arise in predicting its pharmacological properties, yet its effects must ultimately depend on its chemical composition; and the advance of chemical investigation is gradually leading to the elucidation of the problems of pharmacodynamics in relation to structural formulæ.

In a recent paper which appeared in the September number of the *British Medico-Chirurgical Journal,* Dr. Oliver C. M. Davis shows how in certain chemical groups of bodies physiological effects are related to chemical structure and properties. For example, in the case of certain anilides or derivatives of aniline, which are slowly hydrolyzed within the body with production of the amine and the acid from which they are derived, it is found that toxicity varies to a great extent with the rate of their decomposition; thus, formanilide is more toxic than is acetanilide. A second factor in the toxicity of these bodies is the molecular weight of the resulting acid, an increase in this respect leading to a diminution in pharmacological potency. A third factor of importance is found in the degree of its chemical affinity for the tissues of the body, and it is seen in the case of toluidines—for example, that the "para" salt is active, while the "meta" salt is of little potency and the "ortho" salt is inert. Thus atoxyl—para-amino-phenyl-arsenic acid—is effective against trypanosomes, while its "meta" and "ortho" relatives are of little or no

value (Breinl and Nierenstein). The power of certain bodies to attach themselves to the molecule of protoplasm seems in some cases to depend on the presence in them of an amino group. Atoxyl may again be taken as an instance, since if its NH_2 group is replaced by OH or by $N(CH_3)_2$ its activity as a trypanocide is lost. Finally, the activity of any substance when it has attached itself to a living cell is influenced by the rate at which it is again broken off from the cell and excreted. Dr. Davis therefore suggests as a guide to investigation a hypothetical formula in which the "toxicity constant" of any body is equal to its "physiological affinity" divided by its "excretion constant."

The whole paper is interesting and stimulating, and deserves the attention of those who are versed in the problems of pharmacological actions, while it leads us to hope that the old taunt against physicians, that they poured drugs of which they knew little into bodies of which they knew less, is in process of being rendered obsolete by extension of pharmacological as well as of physiological knowledge.—*Lancet,* Oct. 19, 1912.

ON THE USE OF THE POSTERIOR LOBE OF THE HYPOPHYSIS AS AN OXYTOCIC AGENT.

Pouillot and Vayssières were amongst the first in France to draw attention to the importance of the extract of the posterior lobe of the pituitary gland as an oxytocic agent. Previous to them, Parisot and Spire had, however, tried the hypophysial medication at the Lying-in Hospital, Nancy, but they used either an extract of the total gland or a powder of the same, and as they themselves recognized, the results obtained, in spite of the large doses used, were far from being identical with the numerous successes obtained in Germany and in England.

More recently Lequeux has reported a case of angular pregnancy in which, in the absence of any contractions, he was able, by means of one injection of pituitrin repeated two days in succession, to "sensibilize" the uterus and to determine the confinement on the third day. He had, it is true, to have recourse to artificial delivery, and noted a complete retention of the placenta in the right horn, due to hour-glass contraction of the uterus; as a matter of fact, he attributes this retention to the angular pregnancy rather than to pituitrin. This case confirms the conclusions of Fries and Schiffmann, who state that "if, with women who are at the expulsion stage, one or two injections suffice to conclude the confinement, the provocation of labor toward the end of the pregnancy requires successive injections, the number of which decreases in proportion as the pregnancy approaches its end."

Quite recently Hauch and Meyer, of Copenhagen (*Archives Mensuelles d'Obstétrique et de Gynécologie,* 1912, No. 10), have published an extremely interesting article on pituitrin, which offers the opportunity of condensing the rational indications of this preparation in obstetrics.

Pituitrin has the property of stimulating the muscular system of the pregnant uterus. Injected during labor, it aptly increases both the intensity and frequency of the contractions. Its action is sometimes characterized at the outset by one or two contractions of a spasmodic nature, which might last several minutes and which are immediately followed by rhythmic contractions.

Pituitrin develops its action even during the narcosis.

Indications.—Pituitrin is indicated:

1. In cases of *primary and secondary atony.* The rapid action of pituitrin is subject to the uterus being in the state of excitability which characterizes it at the end of the pregnancy, or else to contractions, however feeble, having already taken place. In cases of full-term pregnancy in consequence of insufficient sensibilization, the uterus is in a state of complete atony (before or after rupture of the membranes), and pituitrin alone is able to provoke labor. In this case it is necessary to make several injections at intervals of from three to twelve hours. The action of pituitrin will be the more intense as the pains—at the

moment of the first injection—are at a more advanced stage. It sometimes fails with primiparæ of a certain age.

2. *To accelerate labor* in cases of: (*a*) Functional weakness of the uterine musculature caused by excessive distention due to the presence of twins or to hydramnios. (*b*) Slight pelvic angustia. (*c*) Albuminuria. (*d*) In the interests of the mother: after intrauterine interventions (dilatation, combined rotation); in cases of fever in the course of the labor; in cases of declared or imminent eclampsia. (*e*) In the interests of the child: when the heart-beats of the fetus are irregular or accelerated; when there is a danger of intrauterine asphyxia.

3. In cases of *placenta previa,* after rupture of the membranes, rotation, or dilatation.

4. In certain forms of *presentation of the face and of the seat.*

5. In cases of *prolonged pregnancy* resulting from the absence of contractions.

6. *Indications of convenience:* to hasten the delivery with the simple view of shortening the pains.

7. *As an aid:* (1) With a view to stimulating the progress of the abortion, whether already commenced or incomplete. (2) To provoke premature confinement. In this case pituitrin should only be administered after mechanical dilatation has been previously applied (bag or laminaria).

Pituitrin is not indicated with a view to provoking abortion previous to the fourth month.

8. In cases of *postpartum hemorrhage.* Fries and Fischer recommend the injection of pituitrin previous to the expulsion of the fetus; this as a prophylactic measure against postpartum hemorrhage.

Pituitrin surpasses ergotin, both from the point of view of intensity and of the duration of the contraction produced. Moreover, pituitrin develops its action in cases of profuse hemorrhage due to atony, even in those cases in which ergot has failed.

9. In cases of *Cæsarian section,* with a view to preventing hemorrhage and to hastening the expulsion of the placenta.

Advantages.—These are:

1. *Absence of undesirable after-effects.* Pituitrin sometimes provokes a slackening of the fetal heart-beats, which is, however, of no consequence; but no incident on the part of the mother, and no phenomena of intoxication or accumulation.

2. *Favorable secondary effects:* Prompt expulsion of the placenta; minimum or no hemorrhage; stimulating action on the bladder and the intestine; finally, pituitrin renders possible in numerous cases the avoidance of intrauterine interventions, thereby lessening the risks of infection.

Dose and Mode of Use.—Pituitrin is generally administered hypodermically or intramuscularly; the average dose is 0.5 Cc., which can be repeated three or four times a day, as required.

The intravenous injection provokes, so to say, immediate contractions, accompanied by the desire to pass water and to evacuate the bowels, by vertigo, dizziness, often also by nausea or vomiting, finally by perspiration. In consequence of these drawbacks, the intravenous administration of pituitrin has not become general in obstetrics.

Contraindications.—These are: Nephritis, great pelvic angustia, myocarditis, arteriosclerosis, danger of rupture of the uterus.—*Presse Médicale,* No. 4, 1913.

ADRENALIN IN ASTHMA.

In the *Münchener medicinische Wochenschrift* of January 21, 1913, a contributor writes an article on this topic. He says he has found adrenalin to be a most useful agent in the treatment of asthma, and would recommend it most highly. Experience has proved that subcutaneous injections of a solution of 0.05 to 1 Cc. have frequently shown remarkable results. Ephraim suggests the use of an endobronchial spray (of his own construction) in order to bring the action of the drug to bear directly upon the affected membranes. Galluser also had good results from a similar procedure, and Fr. Kraus reports that even ordinary inhalations had acted favorably in his ex-

perience. Ephraim finds that the drug is least efficacious when used as an inhalant; that the results are less permanent but more effective when it is used subcutaneously; and that when applied directly to the diseased membrane its influence is greatest and most lasting.

Januschke and Pollak in their experiments with muskrats found that adrenalin acts as a bronchodilator in relieving bronchomuscular spasms, and Ephraim, by means of direct bronchoscopic observations, was able to determine that in man, besides its exsanguinating action, it had a specific influence in relieving the swelling of the bronchial membranes. Finally, it causes fluidization and easy expectoration of the secretions. In fact, adrenalin acts on all of the three pathologic conditions to which asthma is supposed to be due—bronchomuscular spasms, swelling of the bronchial membranes, and exudation of a tough mucous secretion.

This circumstance, coupled with the fact that we are not dealing with an extraneous toxin but with a substance which normally circulates in the system, and which the latter is prepared to render obnoxious, makes adrenalin an ideal remedy in asthma. However, in the manner in which they have hitherto been employed, neither the endobronchial spray nor the subcutaneous injections have proven entirely satisfactory owing to the recurrent nature of the malady. The former is drastic and not entirely safe, while the latter requires too large a dose at one time in order to produce the desired local action. Notwithstanding the fact that Gaisböck, in 70 injections given within a period of less than three months, could observe no fixed disturbances, we cannot help recalling the injuries resulting to the entire vascular system by the flooding of the body with adrenalin in animal experimentation.

In spite of the conflicting reports as to the use of adrenalin inhalations, an effort was made to arrive at a satisfactory way of applying the remedy. Most of the apparatus failed because the spray emitted was so coarse that the solution was deposited on the walls of the mouth and the esophagus, only a small amount reaching the bronchial membranes. The best results were obtained with a Hentschel apparatus, with a very fine, almost invisible spray. The construction of this apparatus is not very practical, inasmuch as it requires frequent cleaning as well as a great amount of the liquid, which makes it expensive, besides which it is not adapted for carrying on the person, a great desideratum for the asthmatic patient, who needs an unobtrusive instrument for instant application in the sudden attacks to which he is subject.

In numerous experiments the following solution has proved satisfactory:

Inhaling Solution I.

Adrenalin (1:1000), 9.000 Cc.;
Atropine sulphate, 0.010 Cc.:
Cocaine muriate, 0.025 Cc.;
Water, distilled, 1.000 Cc.

Or,

Adrenalin solution, 18 drops;
Atropine-cocaine solution, 2 drops.

(The following is the formula of atropine-cocaine solution: Atropine sulphate, 0.10; cocaine muriate, 0.25; distilled water, 10.00.)

This is used directly in the inhaler.

Inhaling Solution II.

In light attacks and as a preventive: The usual one-per-thousand adrenalin solution.

It is advisable to keep the two solutions separate.

Synthetic suprarenin seems to be less efficacious.

In preparing the solutions I was actuated by the following considerations:

Adrenalin acts on the bronchodilatoric sympathetic (Januschke and Pollak).

Atropine paralyzes the vagus nerves, which cause bronchial spasticity.

Cocaine affects the sympathetic "end-apparatus" (Froehlich and Loewi).

Objectively, the inhalation produces an astonishingly rapid decrease or even entire cessation of the whistling and the râles, there is a decided improvement in the color of the skin, and a diminished respiration, the time relation between inspiration and expiration being much reduced.

Here are three examples:

	Time of inspiration. Seconds.	Expiration. Seconds.	Frequency of respiration.
1. Before inhalation:	1.2	2.6	16
After "	2.0	2.0	15
2. Before "	1.0	2.6	16½
After "	1.8	2.4	14½
3. Before "	1.1	2.0	19½
After "	1.6	1.7	18

Subjectively, the patient experiences a sensation of breathing freely, the feeling of fulness in the thorax subsides, and altogether great relief is felt. This is followed by fatigue and a refreshing sleep. The glaseptic apparatus is easily portable and is most useful for immediate application, thus giving that sense of security to the sufferer which often prevents an attack of his trouble.

ACTION OF WHITE SANTONIN IN NIGHT-BLINDNESS DUE TO INTESTINAL WORMS.

BEG discusses this subject in the *Indian Medical Gazette* for November, 1912.

Long ago, he asserts, he had the intention of publishing his paper, but rather shrunk from so doing, as from none of his available books could he find any information with regard to the wonderful therapeutic action of white santonin ordinarily supplied from government medical stores in India. He referred the matter some three months ago to his medical officer, Captain J. B. Dalzell Hunter, I.M.S., Agency Surgeon in Siestan, who kindly advised him to send the two cases that derived benefit at his hands from santonin for record.

First Case.—A gardener, aged thirty years, came to his dispensary complaining of night-blindness. He recognized him and asked him whether he had come to the dispensary about a year ago suffering from gonorrhea. He replied in the affirmative. He was also asked whether he ever suffered from chancre or any syphilitic rash on his body. He answered in the negative. His eyes, throat, private parts, etc., were examined; nothing specific could be found, but all the same the author suspected that he must have suffered from syphilis. He put him on potassium iodide, ammonium carbonate, and tincture cinchona comp., and advised him to continue medicines for a time, and that he would be all right. The man used to take away four days' medicines at a time. Whenever he was asked how his eyes were, his replies were not satisfactory. The patient was requested to go on patiently with the medicine, and he would surely derive benefit. He was under treatment for about a fortnight. One day when he came to renew his supplies, he thought it better to give him a dose of santonin, as intestinal worms were most common. He came to him on the second or third day after taking santonin, and to his great surprise told him that about twenty-five worms, each a foot long, were expelled from him, and that since that day his night-blindness was cured. A few days later he happened to be seen in the village, and was asked how he was. He replied that there was no sign of his night-blindness.

Second Case.—This patient was a well-to-do man, aged forty-five. He had much to do with writing, and was wearing eye-glasses. One night he sent for the author and said that he could not see with his right eye. He was given a dose of santonin, calomel, and jalapin at bedtime. Thirty big worms were expelled from him, and his night-blindness was no more.

THYMOL IN THE TREATMENT OF HOOKWORM INFECTION.

LEYS in the *United States Navy Medical Bulletin* for January, 1913, says the drugs most in favor for hookworm are: (1) thymol, (2) betanaphthol, and (3) a combination of oil of eucalyptus with chloroform and castor oil. His series of cases being too limited for comparisons of treatment, it was determined at the outset to adhere to one drug and to an unvaried dosage. This dosage was warranted by the facts that all the cases were between seventeen and twenty-five years of age. None weighed less than 110 pounds, all were in fair to excellent general health, and all were treated under hospital conditions in bed and under observation and control. The dosage of thymol was the largest commonly approved, 30 grains three times at intervals

of an hour, preceded and followed by twenty-four hours' fasting and 1 ounce of Epsom salts. Each patient thus received 90 grains of thymol within a period of two hours. The same course of treatment was given a second and a third time to every case with intervals of ten to fifteen days whether needed or not, in order that records might be uniform and complete. There were no ill effects in any case, and only a few patients complained of an uncomfortable burning sensation in the abdomen. The stools were sometimes examined for ova consequent to the first and second course of treatment; always after the third course. All stools were saved and all parasites counted.

The total number of parasites removed from 96 patients was 4061, or an average of 42 hookworms per patient. Of the 4061 worms removed, the first course of treatment removed 3585, the second course 353, the third course 116. A fourth course, required in only three of the patients, removed seven worms. The average percentage of the total number of parasites removed by each of the three treatments was, therefore, ignoring fractions: first course 88 per cent, second course 9 per cent, third course 3 per cent. These figures represent a higher percentage required by the first course of treatment than the reported general experience with smaller doses of thymol or with various remedies and varied dosage.

In 27 cases, in which the total number of worms varied from two to 144, all worms were expelled by the first course of treatment. In 47 other cases, in which the total number of worms varied from two to 406, all worms were expelled by the first and second courses of treatment. In 19 other cases, in which the number of worms varied from two to 467, the worms were not all expelled until after the third treatment. In the remaining three cases, in which the total number of worms varied from 35 to 525, the worms were not all expelled until after the fourth treatment.

Should one be called upon to treat a considerable number of persons whose age and physical condition would warrant the full dosage followed here, and in circumstances where it would not be practicable to count all parasites expelled at each treatment and not practicable always to examine stools for ova before treatment is repeated, the tabulated results in this series of 96 cases indicate the following rule of practice as giving a reasonable assurance of satisfactory results:

1. Diagnosis by scanning three slides representing nine portions of a natural stool.

2. Course of treatment: First day, in bed; light liquid diet, 1 ounce; Epsom salts at 10 A.M. Second day, in bed; thymol finely triturated, in capsules, grains 30, at 6, 7, and 8 A.M.; 1 ounce Epsom salts at 10 A.M. Save all stools. Count parasites.

3. If 150 parasites or more are found, three more such courses of treatment are likely to be required; if 50 parasites or more, two more courses are required. If fewer than 50 parasites are found, one more ounce of treatment is required. Following this rule, all parasites will have been expelled in the vast majority of cases, and probably not more than one or two worms will remain in any case.

THE TOPICAL USE OF COD-LIVER OIL IN FEEDING MARASMATIC INFANTS.

GRAY in the *Journal of the Medical Society of the State of New Jersey* for January, 1913, says that twenty-five years ago, when the treatment he advocates was begun, practically nothing was known of the chemistry of cod-liver oil; but certain clinical facts, empirically discovered, were established. One was that children below par, as the result of a severe or prolonged illness, or because of errors in digestion, who could not be built up by the most carefully adjusted diet, would come up rapidly with the addition of small doses of the oil to the diet; another that if the digestion had been at fault, this would improve in a marked degree; and another, that infants

who could not digest the smallest amount of fat in ordinary food would utilize small doses of this fat. So this oil was chosen for the attempt to save wasted babies. At this time but little more is known of the chemistry of the oil; that it contains a little iodine, some bile salts, and that oleine is the prominent element in its fat content, are about all. But a very significant physical property, which property explains the empirically discovered facts spoken of, is known: that the body will take up and utilize the fat globules of this oil, without a previous splitting into fatty acids. This fact also explains the utilization of a fat which is so largely oleine.

The food being chosen, the route by which the largest amount in the shortest time is absorbed was to be determined on. The skin was chosen, because known to have an absorptive as well as an eliminating property. Our forefathers used it for the introduction of oil by rubbing it in; also the author had for some time been using the skin successfully for the administration of drugs to infants. No originality is claimed for the use of the oil topically, but he has never been able to find in literature, nor in conversation with physicians, any instance of its being used in the way to be detailed, nor of its being relied on entirely in the treatment of these starved infants.

Treatment.—The child is wrapped in oil-soaked flannel extending from the armpits to the iliac crests. Over this is placed oiled silk. This flannel is removed and, after washing the skin with soap and water, re-applied at intervals of twelve hours. During this time the skin is constantly bathed in oil, and whatever heat the infant has is conserved by the oiled silk.

Experimenters claim that the absorbing property of the skin is slight. This is true when the effort is made to rub the oil through, but Gray has found that with the skin thus constantly bathed in oil, and with the surface heat confined by the oiled silk, from 30 to 50 per cent of oil, by weight, disappears. This is found by weighing the oil-soaked flannel before applying and again on removal, together with the oil scraped from the skin, with an allowance of 10 per cent for that which the scraping does not remove. That this disappearance has been by absorption is proven by results attained.

By mouth nothing but water is given, and this in quantity enough to supply vessels and tissues abundantly, and to aid the kidneys to do the extra work required by the shutting off of so much skin.

What is the sequence of results? First, a rise in temperature, sometimes quickly, sometimes slowly. In a longer or shorter time after the temperature rises the evidences of increase in fat and water content appear. Then the skin begins to lose its dryness, wrinkles begin to disappear, and the old man or woman's face begins to change. Later, at variable intervals, an increase in weight, often considerable, is noted.

The resumption of feeding by mouth is one for judgment in the individual case, and can only be positively determined by occasional attempts, but no attempt to feed should be made until the temperature has been at normal for a number of days, and the skin shows a considerable increase in fat and water content. The length of time of the application, as shown by Gray's records, has been from one week to two and one-half months. This two-and-one-half-month case is the only one he details. The infant was born at 7½ months and poorly nourished. The mother was in desperate condition, requiring all attention, and the baby was wrapped in cotton and put in a warm place. The first attempt to feed, made when it was twelve hours old, showed entire absence of functional ability; within fifteen minutes the food was in the diaper. The weight was 4½ pounds. In ten days following the application of the oil there was a loss in weight of half a pound, the infant keeping only a bright eye and a good pulse to give any encouragement. The temperature during this time remained at 94° in the rectum, making necessary the constant use of artificial heat. The temperature went to normal on the thirteenth day of

treatment, and in the following two weeks the weight went up ¼ pound. From this time on the gain was steady, the weight at two and one-half months being 7½ pounds. Attempts at feeding were made from time to time; the first success coming at eight weeks, when half an ounce of a modification was digested and utilized. The amount was gradually raised, until at the time the oil was dispensed with one and a half ounces at three-hour intervals was assimilated. At five months the weight was 13 pounds. This boy is now seven years old, a sturdy, healthy physique giving no hint of the early struggle for existence.

What have been the end results of the treatment? In twenty-five years 36 premature infants, 30 saved—83 per cent. Congenital marasmus, non-syphilitic or tuberculous, 52—100 per cent recoveries. Acquired marasmus, 220; 206 recovered—93 per cent.

The treatment is a dirty, bad smelling one, destructive of clothing, but the mother of the little, old man or woman, on lap or pillow, will forgive the dirt, the smell, the destroyed clothing, when, after a shorter or longer time, she holds in her arm the robust and rollicking baby.

THE VACCINE THERAPY OF WHOOPING-COUGH.

BAMBERGER in the *American Journal of Diseases of Children* for January, 1913, gives us these facts:

1. The treatment seems rather to lessen the severity of the disease and abort complications than to shorten the duration markedly, although only two of Bamberger's cases lasted as long as six weeks.

2. The sooner the treatment is begun, the better the results.

3. He used less vaccine than Graham. Graham's minimum dose was 240,000,000 and maximum 320,000,000, while his minimum was 100,000,000 and maximum 300,000,000. Nevertheless, he advises larger doses, say 500,000,000, and more frequently (every day), as he thinks the course of the disease can be cut short by so doing.

4. He believes this method of treating whooping-cough is deserving of a trial, as it certainly is harmless and may prove to be of great value.

Bamberger desires to express thanks to Parke, Davis & Co. for supplying the vaccine gratis.

THE TREATMENT OF AUTOINTOXICATION, ESPECIALLY POLYNEURITIS.

In the *Journal of the American Medical Association* of January 11, 1913, VON NOORDEN tells us each case must be studied for itself. There are cases in which one reaches the goal most quickly with a pure milk diet or with modifications of milk, such as sour milk, yoghurt, kefir, etc. In other cases milk is the most unsuitable diet. Farinaceous food or a mixed vegetable diet then probably gives better results. In some cases it was found to be a decided benefit to have the patient take nothing for some days but solution of sugar. There are cases, again, in which an animal diet deserves the preference. In every case our aim must be to give one-sided diet only for a short time, and later to accustom the intestine to a mixed diet. One cannot speak of a definite cure until the intestine works regularly on the ordinary diet which the average man partakes, and until the entire lower section of the intestine is completely emptied at stool. In accomplishing this purpose Von Noorden uses practically no laxatives or other drugs, but has the impression that the best results are obtained in a purely dietetic way. Purgatives, including enemas, only hide the pathological condition of the intestine. Instead of helping they retard the definite cure. They are justified and advantageous only in acute diseases.

The dietetic treatment may be prolonged to several weeks. As a rule, however, two or three weeks are sufficient to establish with certainty the correct way of dietetic treatment. Of course, it always requires a longer period until all secondary symptoms disappear. Increases of temperature, if present, disappear first. Several weeks

or months may pass before the changes in the nervous system fully disappear, and sometimes other measures, such as baths, etc., must be adopted so as to hasten the process of cure. This is exactly the same as in other chronic intoxications. Von Noorden refers, for instance, to chronic nicotine poisoning. When a patient who has smoked considerably gives up the use of tobacco, several months are required before the last pathologic symptoms disappear, and sometimes the changes caused by nicotine are so marked that the symptoms cannot generally be corrected.

He mentions here the nicotine intoxication because, to a certain extent, there is a similarity between the clinical picture of nicotine poisoning and the pathologic picture described. He refers especially to the neuralgias.

THE TREATMENT OF HEART DISEASE IN CHILDREN.

MACKENZIE in the *Lancet* of January 4, 1913, writes of some manifestations of a healthy heart in the young which were frequently taken as indications for treatment. He said that as a first step to treatment it was necessary to have a clear idea of what one is going to treat, and the significance of this was brought out by considering what was the essential purpose of a medical examination. This was to determine the prognostic significance of certain phenomena and their bearing on the presence or likelihood of heart failure. It would be shown that this purpose frequently failed in dealing with such phenomena as irregular action of the heart and murmurs. The absence of reliable data had hitherto militated against the obtaining of a prognosis based on trustworthy grounds or a basis for an intelligent therapy. A description was given of the means by which this deficiency could be made good, and was illustrated by recent observations on the mechanism by which certain irregularities were produced and their prognostic significance. The bearing of a functional murmur on the heart's efficiency was discussed, and it was shown that certain irregularities and functional murmurs were perfectly compatible with healthy hearts. The relation of functional murmurs to heart failure was considered, and attention was drawn to the fact that the cause of the murmur was not the cause of the heart failure, but that the heart failure was invariably due to the impairment of the heart muscle.

The means by which impairment of the heart muscle could be detected was shown in many cases to depend not so much on the physical signs as upon the due appreciation of the functional efficiency of the heart muscle. The signs by which one could recognize the functional efficiency of the heart had not received that consideration which was their due, and it was on this account, and also on account of the imperfect teaching of cardiac symptomatology, that a mistaken conception of the meaning of these phenomena was so widespread. Evidence of these misconceptions drawn from personal experience was offered, showing how normal phenomena had been taken as indications for treatment, and as a consequence how cardiac therapy had become burdened by many useless drugs and methods.

THE TREATMENT OF PULMONARY TUBERCULOSIS WITH SMALL DOSES OF TUBERCULIN.

BARDSWELL in the *Lancet* of January 4, 1913, makes a report on this subject.

1. *Immediate Result.*—In the case of all the patients thus treated the injection of the small dose of tuberculin almost invariably resulted in a satisfactory immunizing response, as shown by the rise in the opsonic index. The repeated immunizing responses were not, however, associated with any appreciable alteration in the clinical condition, in respect to such essential factors as reduction of temperature, diminution in the amount of sputum, disappearance of the tubercle bacilli, etc. The writer was indeed unable to detect any difference whatever in the progress of the tuberculin-treated patients as compared with the progress of

similar types of patients who, living under precisely similar conditions, were not having tuberculin. It is of some interest to note that in no case did the weekly repetition of the small doses of tuberculin give rise to any hypersensitiveness.

2. *Ultimate Results.*—Considering only the 17 cases whose treatment extended over periods ranging from a minimum of seven weeks to a maximum of twenty-five weeks, the results are as follows: Of twelve cases of moderately advanced disease, after a period of five years since discharge from the sanatorium, four, or 33 per cent, are well, and the remainder are dead. Of those who have died, two lived for over four years, three lived for over three years, two lived for over one year, and one lived three months only after discharge. Two of the four patients who are well lost their bacilli before they left the sanatorium. The five cases of very advanced disease all died within twelve months of their discharge.

These results, as a matter of fact, compare somewhat unfavorably with the ultimate results of comparable cases treated in the sanatorium during the same period without tuberculin. The numbers treated with tuberculin, however, are small, so no great importance can be attached to such a statistical comparison.

The conclusion he thinks he is justified in arriving at is that the tuberculin, from a clinical point of view, was a negligible factor, and in no wise influenced either the immediate or the ultimate prospects of the patients to whom it was given.

ADRENALIN IN WHOOPING-COUGH.

FLETCHER writes to the *British Medical Journal* of December 28, 1912, in support of this use of adrenalin.

Whilst not claiming to be able to check the paroxysms of whooping-cough in ten days by adrenalin, Fletcher thinks that his results have been sufficiently gratifying to merit their publication.

It was after successfully treating some cases of asthma by the hypodermic injection of 1-in-1000 adrenalin solution that he decided to give it a trial in whooping-cough. He did not think it was wise to attempt hypodermic medication with children, and so gave it by the mouth. The dose given varied from 1 to 3 minims in water, according to the age of the patient. At first, with infants under six months, he gave ½-minim doses, but found that dose was too small. The largest dose given was 3 minims, to a patient aged seven years. The frequency of administration varied according to the severity and frequency of the paroxysms—every three hours in the more severe cases and every four in the less acute.

His first case was that of a boy aged seven years. Treatment was commenced when the paroxysmal stage had existed for two days. He was then having attacks of coughing every half-hour during the day, and every twenty minutes during the night. He was given 3 minims every three hours. The paroxysms quickly diminished in frequency and intensity, and ceased completely fourteen days after the treatment was commenced. There was no relapse.

He communicated the results of about forty cases to the Liverpool Medical Institution in May last. Unfortunately all the cases did not give such a good result as the one mentioned above, but there was a decided benefit in practically every one.

The average duration of a case of whooping-cough is given as six weeks. Under adrenalin treatment it is the exception for one to last longer than three weeks.

In many cases of whooping-cough, particularly when it occurs in infants and young children, there is persistent vomiting, which produces marked anemia and wasting. As far as Fletcher's experience goes, adrenalin checks this very quickly, with the result that there is, in many cases, a marked improvement in the patient's general condition before the cough has ceased. This, he thinks, considerably lessens the liability to most of the complications and sequelæ of the disease.

No other form of treatment was administered along with the adrenalin, and the

patients were allowed out whenever the weather permitted.

He cannot explain the action of the remedy, the administration on his part being quite experimental. The number of cases so treated is certainly not large, and perhaps the results from a more extended trial would not be so successful, but he certainly thinks that adrenalin is worthy of such an extended trial in the treatment of whooping-cough.

THE CUTANEOUS REACTION TO TUBERCULIN IN CHILDHOOD.

In the *British Journal of Children's Diseases* for December, 1912, La Page writes on this topic. He asserts that the reaction to tuberculin is specific, and it is a broad rule that all cases infected with tuberculosis give a reaction.

The subcutaneous method gives the highest percentage of results, but for practical purposes the cutaneous method is the most suitable.

Human tuberculin should be used because bovine tuberculin does not give reactions in all cases.

The substances used to dilute the tuberculin do not in themselves cause a reaction in the strengths they are now used.

The nature of the reaction is not yet proved.

The results of the clinical examination and the tuberculin test are confirmatory of one another, the reaction occurring far more frequently in those showing symptoms pointing to tuberculous infection.

The *x*-ray examination and the cutaneous tuberculin test correspond fairly closely if their results are properly interpreted.

A reaction indicates that the subject has been infected with tuberculosis and does not mean that the disease is progressive or even active.

We have at present no method of performing the test to afford us a means of distinguishing between active and passive disease, but research may find such a method.

A marked reaction or a reaction in a healthy person may be of good import and need not bear a sinister interpretation.

Slight reactions seem to occur more often in cases negative or only possible clinically.

A negative result may follow the test in children infected with tuberculosis: (1) if the disease is advanced; (2) if there is cachexia; (3) in very acute disease; (4) in mixed infections or cases complicated by acute disease.

A single negative test does not exclude tuberculous infection, repetition of the test increasing the percentage of positive results considerably (28 per cent).

Even a negative result on repetition of the test does not always exclude infection, because some cases are only positive on the third application, and others, positive to *x*-ray examination, but neither advanced nor cachectic in nature, do not react to repeated tests. Therefore, judged by the *x*-ray examination, the cutaneous tuberculin test cannot be regarded as absolutely reliable in excluding tuberculous infection.

In some cases the first test may stir up powers which have not given a reaction at the first test, but which produce a reaction at the second test.

With the exceptions noted above, and excluding faulty technique, a negative result to the test applied twice can for all practical purposes be held to mean that there has been no infection with tuberculosis.

There is greater difficulty in diagnosing occult tuberculosis after the age of two years. In indicating tuberculous illness the test is of greatest value in young children.

As judged by the cutaneous test on children attending at a hospital, tuberculous infection occurs in 32 per cent up to the age of two years, in 51.2 per cent from two to five years, in 60 per cent from five to ten years, and in 60.8 per cent from ten to fourteen years. Even in cases negative to clinical examination, infection occurs in 14.7 per cent up to the age of two years, in 31.4 per cent aged from two to five years, in 30.7 per cent aged from five to ten years, and in 51.2 per cent aged from ten to fourteen years. In other words, tuberculous infection is common in early

life, increases rapidly in frequency up to the age of ten years, and then increases steadily but less rapidly, until at the end of school age at least 60 per cent of children have become infected. Even in cases negative to clinical examination about 50 per cent have become infected.

ABSORPTION OF ARSENIC FOLLOWING INTRAMUSCULAR INJECTIONS OF SALVARSAN AND NEOSALVARSAN.

SWIFT in the *Journal of Experimental Medicine* of January 1, 1913, reaches these results:

Intramuscular injection of salvarsan and neosalvarsan in rabbits always produces necrosis of the muscles. A much more intense reaction is produced by salvarsan than by neosalvarsan.

The rate of absorption of arsenic following intramuscular injections of salvarsan is very slow, while following intramuscular injections of neosalvarsan between 75 and 85 per cent of the arsenic is absorbed during the first week. The subsequent absorption is quite slow.

TREATMENT OF HEMORRHAGE BY MEANS OF PRECIPITATED BLOOD SERA.

CLOWES and BUSCH write fully on this subject in the *New York Medical Journal* of January 4, 1913. They reach these conclusions:

1. Blood serum is found to be of considerable value in the treatment of all forms of hemorrhage due to low blood coagulability resulting from diminished thrombin content.

2. Human serum is in no wise superior to that of a variety of animals.

3. Blood serum precipitated by means of a suitable mixture of acetone and ether is fully as effective as fresh serum, if not superior to it. Precipitated serum is freely soluble and possesses the advantage over fluid serum of being sterile, always available, and retaining indefinitely its capacity to stimulate coagulation of the blood.

4. The product obtained from horse serum appears to yield more uniformly satisfactory results than that obtained from the sera of other animals and exerts no deleterious effects.

5. The determination of the rapidity with which sera and solutions of precipitated sera at comparable concentrations cause coagulation of citrated blood plasma affords a simple means of estimating the relative activity of the preparations in question, and consequently of standardizing precipitated sera for clinical purposes.

THE TREATMENT OF HEMORRHAGIC DISEASE OF THE NEW-BORN.

In the *Archives of Pediatrics* for December, 1912, VINCENT reports some cases treated by the use of alien blood. In every one of the eleven cases treated by transfusion the immediate effect of the procedure was to check the bleeding and correct the anemia. The infants in the successful cases were apparently changed at once from sick to healthy children, who slept and nursed in a normal manner. The only exception to this rule of easy convalescence was one case with extensive hemorrhages under the scalp. This infant did not do well until these hematomas had been absorbed. The cases of melena usually passed two tarry stools before fecal matter appeared in the movements.

Eight of the eleven cases treated by transfusion were cured. One case died within twenty hours of a diffuse peritonitis which, as shown by autopsy, was undoubtedly present and undetected at the time of operation. One other case, which ended fatally, was probably of syphilitic etiology. The bleeding was checked by the transfusion, but the infant died of the syphilitic infection about one month after the operation. The most recent case of this series, although unsuccessful, furnished a good illustration of the possibilities of transfusion in hemorrhagic disease. The patient, three days old, was brought to the Infants' Hospital in Boston on November 6, 1912. The cord had been bleeding for two days, and the child reached the hospital in an exsanguinated and moribund condition.

Death seemed a question of only a few minutes. Transfusion was done as quickly as possible with little regard for aseptic technique. The infant took an occasional shallow, gasping breath during the operation, which lasted about fifteen minutes. The pulse was improved by the transfusion, but the new blood had no apparent effect on the respiration. After immersion in a pail of hot water the breathing slowly improved and the infant's skin became red. The baby was very weak, but slept during the night and took a little whey in the morning. At noon the child refused nourishment, the pulse and respirations gradually failed, and death resulted twenty-four hours after the transfusion.

The cases which recovered have been traced with one exception. The oldest child is now two years old, and all are reported to be in perfect health, with no abnormal tendency to bleed.

The four additional cases not treated by transfusion received injections of whole human blood. In two of these infants, which were apparently cases of true hemorrhagic disease of the new-born, the bleeding took the form of an intracranial hemorrhage, which was indicated by a lumbar puncture and demonstrated at autopsy. The other two were cases of melena neonatorum. One infant died very quickly of a continuous profuse hemorrhage; the other died suddenly of an unexpected recurrence of the bleeding.

Although these four cases received injections of whole human blood, the fatal result which occurred in all of them cannot fairly be taken as evidence that this method is ineffectual, since three of the cases were moribund at the time the injections were given, and in the other case the injections were not repeated as prescribed in this form of treatment.

In view of the autopsy findings, transfusion, in all probability, would not have averted the fatal result in the two infants with intracranial hemorrhage. It is a question whether, in addition to measures intended to check the bleeding, further operative procedure is advisable in these cases to remove the clot or to relieve the cerebral pressure. It is impossible to state with certainty that transfusion could have saved the two cases of intestinal bleeding. In the light of past experience it is a matter of regret that transfusion was not done in one case by a mistake in judgment, and that death occurred so quickly in another case that the operation could not be performed.

Summarizing his views, Vincent concludes as follows:

Several cases in this series received animal serum subcutaneously without apparent result, and were subsequently cured by transfusion. This agrees with the experience of other men in this respect, and without justifying the statement that animal serum is altogether ineffective, it confirms our opinion that human blood or its derivatives is more valuable in these cases. As Vincent's experience in the treatment of hemorrhagic disease is almost wholly confined to transfusion, he is naturally prejudiced in favor of this procedure. The good results which have been obtained by Schloss and Commiskey and others who have used whole human blood, and by Welch in his large series of cases with blood serum, are sufficient evidence that these measures are efficacious in checking the bleeding in this disease.

If, as seems possible, the bleeding in many of these cases of hemorrhagic disease is due to a defect in the infant's blood, which is apparently improved by all three methods of treatment, it would seem that transfusion is the ideal method, because it directly restores to the infant's circulation all the elements needed for coagulation.

In addition, transfusion possesses the advantage of correcting the anemia by replacing the cellular elements which have been lost in hemorrhage. For this reason, as pointed out by the advocates of the other methods, blood transfusion is the only measure from which results can be expected in severe types of the disease in which the patients have been exsanguinated by continuous profuse bleeding.

The uniform success which has attended the use of the injection of whole human

blood, blood serum, and the transfusion of blood would lead us to believe that the best line of treatment to pursue in these cases is a rational combination of all three methods. In those cases in which the bleeding is rapid and profuse, and which are usually quickly fatal, an immediate transfusion is indicated. Since the disease, however, often begins with trivial hemorrhages, in such a case, if seen early, the easier and more simple methods of blood or serum injections are in order. Assuming that these two measures give equally good results, it would be advisable to make the first injection of whole blood to save delay, and at the same time to collect enough blood to furnish serum for further treatment. This treatment should be continued if the bleeding stops or seems to be diminishing and the infant's condition remains good. Cases which do not follow so favorable a course, or cases that are not seen until the patient is exsanguinated by hemorrhages which have been going on for some time, are more safely treated by transfusion. The procedure is more formidable than simple injection, but the results are immediate and permanent. Carried out by the method described above, the operation can be done with safety and without difficulty. Once accomplished, a case may be left with the assurance that the infant is in no immediate danger, which is of no small advantage when the case cannot be kept under constant observation.

Although it seems possible to save most cases of hemorrhagic disease by these measures which stop the bleeding, there are two forms of the disease in which a cure cannot always be effected by transfusion or any other method of treatment. The first form includes those cases in which the underlying cause of the bleeding, as bacterial infection, syphilis, and ulcers of the stomach or duodenum, is such as to be fatal in itself, and the second form comprises the cases with hemorrhage in the brain, adrenals, kidneys, and liver, in which the location, not the extent, of the bleeding is the vital factor. With these exceptions Vincent's experience to date with the use of human blood or its derivatives in hemorrhagic disease of the new-born seems to show that this agent is capable of checking the bleeding in this condition, and that, by the proper application of one or a combination of the methods under discussion, we can cure a large percentage of cases in this hitherto exceedingly fatal disease.

SALVARSAN IN PERNICIOUS ANEMIA.

In the *British Medical Journal* of December 14, 1912, HOBHOUSE writes on this topic. He says that the blood reports speak more eloquently than any words, and concludes with the following remarks:

1. The rapid fall of temperature after the first injection suggests very strongly the destruction of some virus.

2. In another case the second injection should certainly be postponed, as long as improvement was going on, for a week or two.

3. It is difficult to say to what the severe reaction after the second injection was due, possibly hypersensitization. Hobhouse has come across pleurisy in another case after salvarsan.

4. It remains to be seen, he thinks, whether intravenous is equal to intramuscular injections where prolonged action is desirable, though the latter has undoubted advantages.

5. The results are so striking that though we know all cases do not react in the same way, this treatment should always have a trial.

THE SUPPRESSION OF THE CONVULSION IN ECLAMPSIA.

In the *Lancet* of December 7, 1912, WALLACE discusses this important subject. He recalls the fact that in December, 1910, Leith Murray read a paper on puerperal eclampsia, in which he made the suggestion that as intrathecal injections of solutions of magnesium sulphate had proved useful in tetanus they might also be of service in eclampsia. This very valuable suggestion has not received the recognition it merits, for the results in the treatment of tetanus have been at least encouraging. Crandon

states that of 206 cases of postoperative tetanus collected by various writers the large majority were fatal, whereas in an article in the THERAPEUTIC GAZETTE Fox's collection of fifteen acute cases of tetanus treated by intrathecal injections of magnesium sulphate is shown to yield a recovery rate of fifty per cent. In Blake's case the injections controlled the convulsions for periods varying from twenty-nine to thirty-seven hours. Blake considers that the use of magnesium sulphate is reasonably safe, and that it offers a means of modifying the convulsions and relieving the pain in a way no other drug has approached. "When injected into the subdural space of the lumbar region the drug produces paralysis both of motion and sensation, at first in the lower extremities, and afterward in the trunk and upper extremities." In some of the cases on Fox's list more than one injection was required, as many as eight being given in two instances. Care in administration is needed, for too large a dose may lead to a fatal termination by causing paralysis of the respiratory center, and therefore subcutaneous and intravenous administrations are stated to be unsafe.

Recently, whilst fulfilling a term of duty at a maternity hospital, Wallace had some conversation on the subject with Dr. Murray, and subsequently gave the treatment a trial in the two cases now to be reported. The usual 25-per-cent solution of magnesium sulphate was employed after sterilization. The dose was regulated by the body weight of the individual patient, 1 Cc. being allowed for every 25 pounds of body weight. It is practically impossible to weigh eclamptic patients, and a rough estimation of weight had to be made from height and bulk. The needle was introduced in the middle line between the third and fourth lumbar spines.

It is impossible to draw conclusions from two cases, but he calls attention to two points: (1) In each case after injection an interval of freedom from convulsions ensued. In Case 1 seven fits occurred during the seven and a half hours preceding injection, none during the subsequent seven hours. In Case 2 six fits preceded the injection (three of them were severe), whilst none occurred during the following four hours. The anesthetic used may have contributed to this quiescence, but it could not have been responsible for the second interval of four and a half hours after the second injection. (2) Case 1 was an ordinary one of eclampsia; the patient would probably have recovered in any case and the child might have been born alive. On the other hand, Case 2 was a severe one and the outcome was doubtful. Wallace feels assured that but for the two intervals of four and a half hours respectively a dead child would have been born. What is now required is proof that there is direct connection between the intrathecal injections and the after-quiescence, and only an extended trial can settle this point.

Murphy has employed intrathecal injections of morphine and eucaine in tetanus with good results, and it is possible they might be useful in eclampsia also. The dose used was extremely small (morphine gr. 1/75, eucaine gr. 3/50), so that the danger of adding further poisons to a blood already overloaded with them is very slight. Wallace again repeats that treatment of this kind is purely symptomatic, but if it even only diminishes the intensity and the number of the convulsions the patient's strength is thereby conserved, visceral damage is lessened, whilst time is given for the treatment of the disease itself.

THE TREATMENT OF PULMONARY TUBERCULOSIS BY ARTIFICIAL PNEUMOTHORAX ACCORDING TO THE METHOD OF FORLANINI.

BALBONI (*Boston Medical and Surgical Journal,* Nov. 28, 1912) records twenty-one cases and gives a brief historical résumé of the method of treatment, stating that Forlanini advanced the theory in 1882 and brought the matter before the International Medical Congress held at Rome in 1894. In 1895 he reported the first clinical cure in an advanced case of unilateral pulmonary tuberculosis. He made no further report until 1906. J. B. Murphy reported five cases in 1898, but with a technique quite

unlike that of Forlanini. No one seems to have taken up the method until 1911, when Robinson and Floyd of Boston reported their series of twenty-seven cases, and these clinicians' results were excellent. Robinson improved the technique and simplified the apparatus.

It is a well-known clinical fact that phthisis not rarely assumes a favorable course if the affected lung becomes compressed by a pleural exudate or by a spontaneous pneumothorax. Forlanini's theory, however, is a complex one based on personal conclusions regarding the nature of the phthisical process, from which it is a natural deduction that the absolute immobilization of the lung necessarily inhibits the destructive process.

The theories advanced as to the cause of action of therapeutic pneumothorax are based on the mechanical immobilization of the lung and the diminished circulation resulting therefrom.

The compressive action of the pneumothorax brings about its results in accordance with the general precept of surgical therapy, that the reparation of the solution of continuity demands the permanent evacuation of the contents and the bringing of the walls into contact. Forlanini's theory is that the destruction of pulmonary tissue and the resulting cavities are nothing less than solutions of continuity which do not heal because they are never completely emptied, but are, on the contrary, kept irreducibly gaping or open by the relative rigidity of the thoracic cavity. A properly produced pneumothorax frees or separates the lung from the thoracic wall, immobilizes and compresses it, reduces the cavities and empties them, and by the coalition of their walls brings about their obliteration and cicatrization.

Another factor also comes into play. Whatever may be the manner of entrance into the lung of the pathogenic germs that cause phthisis, the successive spreading of the process comes about usually through the respiratory tract. Some part of the septic material, as it is being expelled during expiration, is easily drawn back into the lung during inspiration, causing the continuous formation of new foci of infection. The immobilization of the lung overcomes this, the prevailing, if not the only, cause of the continual spreading of the process. Thus the other lung, if not already diseased, is protected, spreading of the infection into other parts of the body, such as larynx and intestines, may be prevented, and a means of combating the spreading of the disease in general may be secured.

Shungu has shown experimentally in animals that in the compressed lung there is a lymphatic stasis. With the elimination of respiration, which is an essential factor in the maintenance of a regular lymphatic circulation, a stasis of lymph naturally results. From the lymph stasis a diminution of the absorption of the toxins on the part of the organism and a general improvement in the condition of the patient are produced.

Pigger and later U. Carpi, studying the opsonic index in patients who were treated with artificial pneumothorax, proved that the opsonic index is increased if the diseased lung is immobilized, providing complications of a tuberculous nature do not arise elsewhere. The opsonic index after certain initial oscillations reaches in a constant manner a value above normal, which will still show increase corresponding to the new introduction of gas.

H. Brauns, of Hanover, by using the rapid precipitation method of Spengler, has observed an increased immunizing value of the blood after each introduction of nitrogen.

The pathological observations of cases that have come to autopsy, the patients dying of intercurrent diseases, have given anatomical proofs of recovery through cicatrization of all the destructive lesions of the lung which had been treated with artificial pneumothorax. Forlanini in the microscopical study of three cases noticed that the compressed lung undergoes great modifications. First he noticed atelectasis; second, an extraordinary tendency to the formation of connective tissue and of hard masses about the bronchi, large vessels, and in the pneumonic foci; third, the formation

of a capsule about the old tuberculous foci and a tendency to cicatrization; and finally, very few recent tuberculous foci were visible, and these contained very few tubercle bacilli and there were no giant cells. Graetz, Drasche, and Wurtzen have since confirmed these findings.

Forlanini says that the pneumothorax must be kept up indefinitely in the following cases:

In cases of advanced phthisis in which there are extensive or disseminated foci, where a good part of the lung is involved and there are no large masses of lung free, lest adhesion of the layers of the pleura, especially if there has been a pleurisy, may result.

In cases in which the other lung has lesions or is threatened.

In unilateral cases in which the lesions are extensive, the healed lung is reduced to a contracted cicatricial mass, which cannot reëxpand so as to reoccupy the thoracic cavity when the pneumothorax is absorbed. It is kept up for the purposes of preventing deformity of the thorax and the subsequent displacement of organs in the mediastinum and in those adjacent to the diaphragm.

He advises maintenance of the pneumothorax because the absorption of the pneumothorax would be of little advantage and because the replenishing of the pneumothorax is a measure which is required less frequently as time goes on, and the trouble is amply compensated for by the good results obtained.

During the course of treatment, which may have extended over months, the pleura has been in contact with the nitrogen gas—that is to say, in a medium not physiological. This long contact may cause structural alteration to take place in the parietal and visceral pleura, and these coming into contact cement and thus partially or totally obliterate the pleural cavity. This would naturally prevent later treatment by artificial pneumothorax or render it more difficult. Evidence shows that the compressed lung retakes its normal function once it has reëxpanded. However, if the process has not completely healed, the reëxpansion of the lung may cause the process to become active again.

In the tuberculous healed lung there exist abnormal anatomical changes, and the lung is the lung of an individual predisposed to the disease because he has been once ill with tuberculosis. The tuberculous process may start up *de novo* a second time. If this comes about, the treatment can be instituted again.

The discontinuance of a pneumothorax, especially in unfavorable sanitary conditions, will only result in bringing about new areas of infection; while the epithelium of the bronchial mucosa and the pulmonary stroma, weakened from the ischemia, from the compression and the inertia, have not taken up their vitality and their ordinary phagocytic function. In this and in bad hygienic surroundings lie the causes of the failures in the cases in which the treatment is undertaken for only a short time.

THE TREATMENT OF NOMA BY SALVARSAN.

NICOLL (*Archives of Pediatrics,* November, 1912) states that during the spring and early summer of 1912 there occurred an unusually large number of fatal cases of noma in the city of New York.

At the Scarlet Fever Hospital of the Department of Health there were eleven cases and nine deaths. So much confusion exists in the nomenclature of the various ulcerative conditions about the mouth, especially in children, that it would seem expedient to arrive at some understanding as to what pathologic condition may properly be termed noma. Thus, small ulcerations occur on the inner surface of the cheek from which smears show the presence, often in great numbers, of the characteristic fusiform bacilli and spirochætæ, but which, nevertheless, readily yield to the application of caustics or milder local remedies. Other cases, not to be differentiated bacteriologically from the latter, do not yield to treatment, the ulceromembranous process extending with startling rapidity to the gums and then to the neighboring

alveolar process of the jaw. Again, marginal ulcerations about the teeth, together with a spongy condition of the gums, yield similar bacteriologic findings, but in otherwise healthy children do well under treatment by local application.

The so-called Vincent's angina, in spite of very widely extended lesions, usually produces but few general symptoms, and after a somewhat tedious local treatment runs a favorable course without extensive loss of tissue.

For the purpose of these observations, the term noma is to be understood as designating a rapidly-spreading gangrenous process, beginning usually on the mucous membrane of the cheek and gums and involving all surrounding tissues, including bone, showing little tendency to self-limitation, and from which fusiform bacilli and spirochætæ may be obtained in great numbers in the smears.

Observations of this disease, extending over many years, especially at the New York Foundling Hospital, together with the study of most of the eleven cases referred to above, justify the writer in arriving at the following general conclusions:

The disease is essentially one of contagious disease hospitals and institutions for young children, but few typical cases having been reported from other sources.

It is very largely confined to children under five years of age.

It attacks almost wholly those suffering from marked malnutrition, and whose resistance has been lowered as a result of previous disease.

Measles has long been regarded as one of the predisposing causes. In the eleven cases mentioned, four had an antecedent attack of measles during their convalescence from scarlet fever.

During the occurrence of an epidemic of noma a large number of minor ulcerative or ulceromembranous conditions are found about the mouth and gums in otherwise healthy children, disclosing the same organisms as those found in true noma, but showing little tendency to spread.

In the epidemic at the Scarlet Fever Hospital there was no positive evidence of direct contagion, the cases being scattered over five floors of the building.

Occurring, as it does, in patients in a low state of nutrition, the disease shows little tendency either to spontaneous recovery or to yield to local treatment, or even be influenced by radical surgical measures—curetting and removal of diseased tissues. Occasionally, a sequestrum of dead bone is formed, sharply marked off by healthy tissues, and spontaneous healing occurs. In the eleven cases mentioned one took this course—that which occurred in a patient in previously fair general health. In another the same process was seen after treatment by salvarsan. The other nine died after treatment which varied from the application of strong caustics, and frequent cleansing of the parts, to removal, under an anesthetic, of all the visible diseased tissue, including bone. It cannot be said that radical measures had any apparent effect on the progress of the disease. Indeed, in some cases they seemed to act adversely.

In conclusion it would seem advisable, even in the absence of positive evidence that spirochætæ are the specific organisms of noma, to make use of salvarsan in every case which does not immediately yield to local treatment, for it cannot be denied that other remedies have had little or no effect in controlling this horrible disease, and the use of salvarsan is at least logical.

THE END RESULTS OF NEPHRECTOMY FOR TUBERCULOSIS.

Suter (*Münch. med. Woch.*, No. 45, 1912) quotes Israel to the effect that cure of renal tuberculosis is based on an early nephrectomy. He reports some 60 cases. One died immediately after operation of heart weakness. The autopsy showed an extensive caseating tuberculous peritonitis. The remaining kidney was healthy. Of the 59 remaining cases four later died, giving a total mortality of 8 per cent, thus favorably contrasting with Israel's 25 per cent. Of these deaths one lived for three years and then died of pulmonary tuberculosis, the

second lived for three years and died of puerperal fever, the third for four years and died of uremia, and the fourth after two years died of miliary tuberculosis. Of the 55 remaining cases five were operated on within the last few months and are omitted from further discussion. Of the remaining 50 cases, 28 are completely well, 17 are markedly better.

From the prognostic standpoint Suter regards the condition of the bladder as of vital moment. Of those completely cured the bladder capacity at the time of first examination averaged 200 Cc.; of those markedly bettered it averaged 150 Cc.; of those showing but little improvement it averaged 130 Cc. The average in this last case is too high, since it is markedly increased by a single patient who exhibits a bladder capacity of 400 Cc. Undoubtedly the prognosis is dependent upon the time of surgical intervention, and the fate of the patient in regard to ultimate cure practically lies in the hand of the doctor who first sees him. Of 27 men 16 exhibited complicating genital tuberculosis. In 10 this complication preceded or accompanied the renal involvement, and in six followed it.

According to Suter's figures the prognosis in women is distinctly better than in men. In 16 cases in which the kidney was completely caseated eight were entirely cured (six women and two men). Both men exhibited a tuberculous epididymitis calling for castration. The vesical tuberculosis was cured in both cases. In two cases nephrotomy was practiced because primary nephrectomy was impossible on account of the dense growth of the kidney and the renal fat to the surrounding tissues, especially the peritoneum. Both cases were cured by secondary nephrectomy. Two other cases of exploratory nephrotomy were done without demonstrating lesions; both died, one with thrombophlebitis, the other with embolus. In both cases autopsy showed tuberculosis of the nephrotomized kidney and a sound kidney on the other side.

As to non-operative treatment, that of Roentgen rays is said by Bircher to give good results, but not so good but that we should substitute operation when it is available. Suter's experience with tuberculin has been unfortunate. After operation the patient should be subjected to the treatment applicable to tuberculosis in general, since it is probable there exist other foci than in the kidney.

GROSS ANATOMY OF THE SPINAL CORD AND NERVE ROOTS, AND THEIR BEARING ON SPINAL SURGERY.

ELSBERG (*American Journal of the Medical Sciences,* December, 1912) notes that the ligamentum denticulatum, a fibrous band derived from and attached to the lateral aspect of the pia mater on the cord midway between the anterior and posterior roots, extends from the foramen magnum to the level of the first lumbar vertebra, being attached to the inner surface of the dura by numerous dentations or slips, and dividing the subarachnoid space into an anterior and posterior compartment. It is due to this ligament that a tumor which grows on the anterolateral or posterolateral aspect of the cord will press upon only anterior or posterior roots for a long time, and thus give only anterior or posterior root symptoms before the appearance of symptoms of pressure upon the cord itself.

The dentate ligament ends below, at the level of the first lumbar vertebra, in a fork-shaped extremity. The outer prong of the fork is usually about one centimeter long, and is attached by its end to the inner surface of the dura. Sometimes this prong is 3 or 4 centimeters long. The inner prong of the fork is attached to the pia on the lateral aspect of the cord and is prolonged downward along the side of the conus to its tip. The first lumbar posterior root rests upon this fork, so that the "fork" may be used as an anatomical landmark for the identification of the first lumbar root.

The posterior roots of the lumbar and sacral nerves are dorsally placed with reference to the fibrous band on the side of the lumbosacral cord and conus derived from

the dentate ligament, and can be easily raised up with a probe which is bent to a slight curve. At their origin from the lumbosacral cord the posterior roots lie close together, but when they are raised up with the probe the separate roots can be recognized. If one begins to count from the posterior root which lies on the fork of the dentate ligament, which is the first lumbar, one can easily identify each posterior root.

The importance of these anatomical facts for the operation of division of posterior roots to the lower extremities is clear. In this operation it is usually necessary to divide four or five posterior roots on one or both sides, and therefore four or five laminæ have to be removed so that the roots can be identified at the points where they perforate the dural sac. Sometimes it is not easy or certain that one has separated the posterior from the anterior root. To avoid this extensive laminectomy, van Gehuchten, Codivilla, and Wilms and Kolb have suggested that the nerves should be exposed at their origin from the lumbosacral cord by the removal of three laminæ in the dorsolumbar region. According to these authors, however, it is difficult to recognize the roots to be cut, and there is danger of division of the anterior roots with the posterior ones.

Based upon the anatomical facts above described, the author has in the cadaver exposed the lumbosacral cord by the removal of the laminæ of the eleventh and twelfth dorsal or eleventh and twelfth dorsal and first lumbar vertebræ, and has been able to recognize and divide the lumbar and sacral posterior roots desired. He recommends the following method for the exposure and division of posterior roots to the lower extremities: Removal of the spinous processes and laminæ of the eleventh and twelfth dorsal vertebræ (and of the first lumbar if necessary) in the usual manner; exposure of the "fork" of the dentate ligament and identification of the first lumbar posterior root; careful elevation of all of the posterior roots of the side to be operated upon (which lie dorsal to the lateral fibrous band on the side of the lumbosacral cord) upon a bent probe passed under them; identification and isolation of the desired posterior roots by counting from the first lumbar root; division of the roots in the usual manner.

NEOSALVARSAN AND SALVARSAN.

KREFTING (*Berliner klinische Wochenschrift,* Nov. 4, 1912) states that in the last two years he has treated 35 people with primary syphilis, beginning his therapeutics at the period when the Wassermann reaction was still negative. Each received three salvarsan injections of 0.5 to 0.6 in men and 0.4 in women, the interval between injections being from fourteen days to three weeks. None exhibited secondary symptoms, and the Wassermann reactions remained negative. Two of these patients became reinfected. He has used neosalvarsan the last month in five cases of primary syphilis without Wassermann reaction, giving three injections to men of 0.75, to women of 0.60, at fourteen-day intervals. Three of the cases gave a negative Wassermann; the fourth became strongly positive after the first injection and remained weakly positive after the third. A single woman exhibited a similar condition. None of the cases showed any secondary symptoms. The author concludes that neosalvarsan is entirely efficient against the clinical manifestations of syphilis, but it does not seem so potent as salvarsan in preventing the development of the Wassermann reaction.

TREATMENT OF CHRONIC CONSTIPATION.

HOUCK (*Cleveland Medical Journal,* October, 1912), after insisting upon the importance of the regular habit, states that following Howard A. Kelly's suggestion he has had his patients rest the feet on a low, stout box placed directly in front of the closet seat when at stool. This is done with a view of obtaining a more crouching position in order to increase the expulsive

force of the abdominal muscles. For the past few years, in order more readily to obtain the coöperation of patients and keep them under observation, he has used a method suggested by Dr. MacMillan. This consists in using rectal tampons of ordinary surgical cotton or lamb's wool. The tampons are inserted by means of a Kelly proctoscope with the patient in the knee-chest or left lateral position, and are permitted to remain in the rectum till they excite peristalsis and a strong desire to defecate. This usually occurs in from two to six hours. The patients are then instructed to go to stool the following day at the appointed time. Whether evacuation of the bowels occurs at this time or not, the rectal tampon should be inserted on the second day and on alternate days for a period of about two weeks. After this the interval between treatments should be lengthened until the habit of regular and complete evacuation of the bowels is established.

He has had no experience with hormonal, and has refrained from using it because of fatalities reported. Regulin has been unsuccessful. High enemas have been abandoned in the treatment of chronic constipation.

THE ABORTIVE TREATMENT OF SYPHILIS.

Voss (*St. Paul Medical Journal,* November, 1912) gives his views and experience of the effect of salvarsan and mercury administered energetically in the earliest stages of syphilis. Before embarking on his subject proper, the author indulges in a very severe attack on the general practitioner, who, he maintains, often fails to recognize a primary sore at a sufficiently early stage, and who thus allows the best time for successful treatment to go by. He is of opinion that every practitioner should be capable of diagnosing syphilis with certainty from a microscopical specimen stained with either Giemsa's or Burri's stain. He considers it unpardonable to wait for secondary symptoms to develop before starting the treatment. As soon as a suspicious sore or ulcer appears, he examines for spirochætæ, and if they are present, proceeds to give an intravenous injection of salvarsan, while the Wassermann reaction is still negative. The dose he injects is 0.4 gramme. After from ten to fourteen days he gives his first injection (intramuscular) of the mercury salicylate (dose 1 gramme divided among ten to fifteen injections). After a further pause of about fourteen days he gives the second salvarsan injection of from 0.4 to 0.6 gramme. He further considers it wise to have the patient under active treatment at the time when the secondary eruption might be expected—that is, about the seventh to the tenth week. Besides, he pleads for either the excision of the chancre or its destruction by cautery or hot-air cautery. His results have been highly satisfactory.

While Voss has treated a fair number of patients in this way, he only gives details of a comparatively small number, since the others did not remain under observation. In some he was able to carry out the full treatment as described above; in others the removal or local treatment of the sore was omitted, either because the patient refused or for some other reason; and lastly, in others he did not use mercury. Even these cases did well from the first, no secondary eruption appearing, and the Wassermann remaining permanently negative. He is, however, not inclined to advise this, since we do not know yet whether salvarsan alone can cure, whereas we do know that mercury can cure, and the cure with salvarsan and mercury combined is really abortive.

THE SHORT SPICA IN THE TREATMENT OF HIP-JOINT DISEASE.

Keppler (*American Journal of Obstetrics,* November, 1912) notes that Lorenz employs a short plaster-of-Paris spica encasing thigh and pelvis only. This gives absolute immobilization of the hip-joint, and the position of natural rest and protection, abduction and extension, can be produced while it is being applied and maintained naturally by it after it has hardened. The

result of treating hip-joint disease by this means is satisfactory enough to make its employment very general.

The method of application of the spica is as follows:

The child is placed upon its back on a hip and shoulder rest. The shoulders are held above the feet by an assistant, the feet being supported by another. Over the body and affected limb seamless shirting is drawn, and under this runs a flannel or silk scratch band. Over the shirting padding is wound to sufficient thickness, especially over the anterior superior spines, the perineum, and at the knee. The leg is now drawn into the position of abduction and overextension with slight traction to maintain this attitude. If flexion and adductive deformity are present they must, as far as possible, be overcome and any rotation of the leg be prevented. Then if ankylosis occurs later the real shortening of the limb from destruction of the joint parts is masked and equalized by the necessary tilting of the pelvis. When ankylosed the leg is brought down parallel to its fellow in the act of locomotion. While this position is being maintained the plaster of Paris is applied and should extend from just above the pelvis to the knee. It is of importance to mold it snugly over the iliac crests and around the condyle of the femur. This holds the pelvis and thigh firmly and prevents slipping of the spica or rotation or movement in the hip-joint or of the leg. The plaster is made thickest around the joint and in front of the body, to prevent breakage, as it is well cut away here.

As soon as the bandages begin to set the patient is taken off the hip rest, and while lying on a table trimming is begun. The front part is cut out along its upper border to below the umbilicus, and along its lower so as to expose the genitals and allow right-angle flexion of the healthy thigh. On the sides it is left high enough to encase the iliac crests well; behind, the buttocks are left exposed and the upper border is cut out far enough to permit as free a motion of the spine as possible. At the knee the front and back are trimmed away sufficiently to allow right-angle flexion of the joint and free motion of the patella, but it should extend laterally well over the condyles. When the spica has fully hardened, which should take place in fifteen to twenty minutes, free parts of the shirting are drawn over it and sewed together so as to completely cover it. The scratch band is now pulled up and down to test its freedom of motion, and is then tied together over the spica and should be used by the patient daily all around to insure perfect cleanliness of the skin under the bandage.

On account of growth and also to make observation of the progress of treatment certain, the spica is changed about every three months. Should any vicious position not have been fully overcome, more marked corrective abduction and extension are employed, and the spica is reapplied.

It has to be worn generally two years or more and its discontinuance depends upon what is revealed by the *x*-ray, together with the clinical findings.

Observation of the patient should be enforced for some time, even after cure appears complete.

During the progress of the disease and the time of treatment any of the following complications may arise:

1. Exacerbation of the local disease.
2. Abscess formation.
3. Rupture of pus sac externally with sinus formation.
4. Extension of the tubercular disease to other joints.
5. Assumption of distorted position of the limb.
6. General cachexia, amyloid degeneration of internal organs, and metastasis.

Should exacerbation occur, which is rare, rest in bed with complete fixation is indicated. As soon as possible a long spica including the calf and foot is applied, and is changed to the short spica only when the acute symptoms have subsided.

Should abscess formation occur the pointing sac should be well protected. The pus is usually absorbed in time after the acute destructive process of disease causing it is controlled. On account of the danger

of mixed infection and sinus formation, aspiration or incision is only indicated when the abscess is very large, ready to burst, or when extensive burrowing occurs, as this may extend to the periosteum of the femur, causing tubercular osteoperiostitis.

For the sinuses several methods of treatment have been employed, such as injections into them of iodoform, glycerin, balsam of Peru emulsion, or bismuth paste. The latter has been the most successful, often bringing about closure of the sinus and hastening repair in the diseased joint.

If some other joint becomes involved, which is rather rare, such treatment as is indicated must be employed.

If distortion of the limb follows the cessation of the disease, operative correction is necessary to overcome it.

General means must be employed to overcome the systemic poisoning of the disease: fresh air, sunlight, light wholesome diet, fats, such as are indicated in any tubercular cases.

The employment of the spica is very satisfactory. Abscess formation is rare. End results are usually good; the limb after recovery is firm, warm, but slightly atrophied, and the knee and ankle-joint are well maintained. Contractions and distortions never occur if the spica is always carefully applied. The time of recovery is longer delayed than by brace treatment.

Finally, during the time of treatment the children are but slightly inconvenienced by the spica; their gait is rather good on account of the short leverage of the fixed portion of the body. They wear their clothes over the completed dressing, wear no high shoe, and suffer no mental anguish through ridicule on account of undue clumsiness or distortion.

VACCINE TREATMENT OF ACNE.

GALBRAITH (*Practitioner,* September, 1912) deduces the following conclusions in regard to the vaccine treatment of acne:

The acne bacillus is the cause of acne in all its stages.

The staphylococcus is a surface contamination, and at the most can only aggravate existing pustulation.

Doses of 5 to 10 millions do not suffice to cure, unless one is prepared to go on indefinitely. The doses required range from 30 to 100 millions, according to the type of the disease.

The duration of treatment extends from three to five months in the milder cases, from six to twelve months in the severe forms.

As there is a close relation between the opsonic index and the amount of pustulation, the latter may be taken as the guide to dosage and frequency of administration.

Whilst it is impossible to give anything like a definite prognosis, it may be said that marked improvement is brought about in the great majority of cases and a fair proportion cured, and that it is a striking advance on the older methods of treatment. The mild comedo and superficial pustular types are most amenable to treatment, next the pure comedo type, and last the deep indurated type.

The author states that he has not found an autogenous vaccine give better results than a stock vaccine.

GASTROCOLOPTOSIS.

ROVSING (*Annals of Surgery,* January, 1913) rejects Stiller's hypothesis that ptosis is due to a congenital, universal asthenia, particularly on the ground that the condition is rare in man and frequent in women. Rovsing believes that a very simple explanation is found for women's predilection, basing it partly on the misuse of corsets and lacings and partly on the changes which pregnancy and childbirth involve in the intra-abdominal pressure. Corset and lace pressure brought to bear upon quite young girls naturally affects most the degenerative type, the bones and tissues of whom are particularly yielding. Among ptosis patients many of this type are represented, this explaining to an extent the origin of the theory, but not entirely, since ptosis is a frequent phenomenon with originally quite normal women.

The rare cases of male ptosis occur with those of Stiller's type, with a feeble bone and muscle structure, and in those who have used tightly buckled belts.

Rovsing recognizes two principal groups, the virginal and the maternal.

The symptomatology of the virginal ptosis begins in the course of the first or second year of puberty and the wearing of corsets. To persistent constipation are quickly added weariness, headache, loathing of food. In addition to these symptoms there occurs after some time cardialgia, in the form of severe pains which are always situated to the left of the center line and occur as soon as the patient partakes of food. The quality of the food has no significance, whereas the quantity—the mass and weight of the food—is of great importance, for which reason these patients can only get along by taking many quite small meals during the twenty-four hours. In many instances the commencement of the pains is accompanied by vomiting, and in a small group each meal is invariably and immediately in part regurgitated. The patients may maintain an astonishingly healthy appearance for many years; but if they disgorge everything, and abstain from food because of pain, emaciation sets in, which may reach an extreme stage, may present that aspect called gastroptosis-cachexia, and may result in death from inanition.

As to the chemical function of the stomach, acidity is normal, but in a certain number of cases one finds achylia, and in others, conversely, hyperacidity and even gastrosuccorrhea.

In more than half of the cases the motor function is completely normal, inasmuch as the stomach empties itself entirely in the course of four to five hours. In 30 to 40 per cent of the cases there is a slight delay (five to seven hours), while food remains are rarely found eight hours after one of Bourget's experimental meals.

With many of these patients a whole series of nervous symptoms develops gradually as a result of autointoxication and inanition, such as oppression across the loins, in the pelvis and the abdomen, clammy hands and feet, palpitation of the heart, physical depression; with some a mental relaxation, and with others a sensation of dread.

Finally disturbances in the function of the genital organs develop very rapidly, because the menstruation becomes irregular and deficient and is accompanied by diffuse pains in the abdomen.

The pathogenesis of this disease as shown by its symptoms is as follows: The lacing up of the young girl's plastic body in corsets involves an increasing deformation and straightening of the lower thorax. This results in a shifting of the subdiaphragmatic organs. First the pressure acts upon the liver, and this dislocates the organs below. Paul Hertz has shown how nephroptosis arises from corset pressure, because this utilizes the liver as a lever to tilt the right kidney out of its niche, thus explaining the right-sided floating kidney.

If the liver is pushed down the stomach must follow suit, and thereby the esophagus, the gastrophrenic ligament, and the cardial peritoneal covering *in toto* are stretched. This is the cause of the invariable pains in the left side of the epigastrium, of which these patients always complain when they are up and doing, and especially so during meals. In addition, the posterior edge of the gastrohepaticoduodenal ligaments must also become lengthened and dislocated. Together with the stomach, the transverse colon is pushed down, whereby more or less acutely angled bends occur at the points of fixation of the hepatic and splenic flexures. This involves a hindrance of the passage of the feces, which still further and continuously weigh down the transverse colon. Hence the ever-increasing constipation.

The tight abdominal wall and the narrow abdominal cavity do not permit of the free subsidence of the loosened organs. The result is that the stomach as well as the colon fold themselves transversely with the longitudinal axis, and breaks and bends occur which hinder the natural passage of the food and produce stasis and pains. All the vessels and nerves to the stomach run

between the peritoneal layers, which either form the suspensory ligaments or cover these. They form an integral part of the suspensory ligaments, and, when these are folded, are also subject to bends and folds, and when the ligaments are stretched and lengthened by the subsidence of the stomach a considerable drag is also exercised on the vessels and nerves. That such a stretching of the sympathetic fibers, the vagi, and the celiac ganglion cannot fail to affect the activity of these nerves seems evident, and here is to be found the explanation of many of the nervous symptoms of these patients.

The conditions described explain the pains of virginal ptosis patients immediately after partaking of food, and if these symptoms become constant there is emaciation, which makes room for a further subsidence, greater tension on the suspensory ligaments, increased subsidence of the colon, and more obstinate constipation. With the resorption of the stagnant feces a poisoning of the organism arises—autointoxication. The passage through the small intestine takes place more slowly, and in certain cases a real stasis may occur, due to bends in the small intestine at its points of fixation (the duodenal kink and the iliac kink), where the subsided part of the intestine joins the fixed part; or, as Knud Lunn thinks, a result of the constipation, especially where valves are deficient.

The three wrong diagnoses under the flag of which virginal ptosis most frequently sails are (1) ulcus ventriculi, (2) colitis, and (3) nervous disease of the stomach or hysteria.

Those cases in which violent cardialgia and vomiting occur as an immediate result of meals and dominate the aspect are naturally confounded with ulcus ventriculi. This confusion happens all the more easily because the violent and frequent vomiting by no means rarely shows streaks of blood, or even such a strong admixture of blood that they assume the character of hematemesis. The presence of constipation, indeed, only strengthens the diagnosis, because it is so often a symptom with ulcus.

In addition to this the examination of the position of the stomach by scraping, auscultation, or by Roentgenoscopy after a bismuth meal often reveals a subsidence which is inferior in proportion to the acute symptoms. With most cases this seems to controvert the diagnosis, inasmuch as these cases mean quite plainly that the acuteness of the symptoms must be proportionate with the degree of the extent of the subsidence. Not until one has realized that it is just the circumscribed conditions of space which hinder the pressed-down stomach from freely sinking down, but, on the contrary, jam it between the tight abdominal wall, the spinal column, and the other abdominal organs, and force it to place itself in bends and folds, does one understand that these very circumstances, in spite of the apparently minor ptosis, produce such acute symptoms.

The differential diagnosis from ulcus is, as a rule, easily determined from the following facts: (1) The seat of the cardialgia being to the left of the center line; (2) that the cardialgia does not depend on the quality of the food, but does on the quantity of this. An ulcus patient suffers pain from eating rich, sour, spiced food, no matter how small the quantity, but stands milk; while a ptosis patient stands all such food equally well so long as the quantities are quite small, but suffers severe pain from milk and other neutral food when the quantity is too large.

The influence which the position of the body has upon the symptoms is an important diagnostic point. These always are worse in an upright position, and always improve and often disappear entirely simply from confinement to bed.

The cases in which constipation dominates the aspect of the disease, while the stomachic symptoms are comparatively minor, are often confounded with colitis. In many cases the confusion is promoted by this, that the constipation involves in reality a colitis with periodically occurring diarrhea. Here, also, it is a differential diagnostic symptom of great value: that with ptosis, confinement to bed has a highly

favorable effect on the constipation; while constipation arising from other causes generally becomes more marked with confinement to bed.

Even when no trace of ulcus can be proved at the operation, hematemeses are not quite infrequent with gastroptosis. Such hematemeses are probably due to stasis in and swelling of the mucous membrane at the places where the wall of the stomach is creased.

Finally, in a certain number of cases, the virginal ptosis leads to the development of an hour-glass stomach. In his newest operations for gastrocoloptosis Rovsing has been able to observe all the stages of development of hour-glass stomach.

With virginal gastroptosis the bends of the creases occur essentially and naturally in two places: (1) on the lesser curvature at the transition between pars cardiaca and corpus ventriculi in the very place where the triangular solid ligamentum gastrophrenicum (called by some pars condensa of the lesser omentum) ceases and is relieved by the more elastic portion of the lesser omentum; (2) on the medial edge of ligamentum-hepaticoduodenale, where the free portion of the duodenum (with the pylorus) bends toward the fixed part.

The hour-glass formation is generally due simply to the fine adhesions which form themselves in the folds of the serous surfaces which rest one upon the other.

The development is sometimes greatly favored by this, that the lesser omentum by coalescing with the greater omentum assumes a lace formation. With gastroptosis we very frequently find a complete loosening of the lesser omentum, the central part of which subsides and hangs over the anterior side of the stomach as a tongue. It may then come in contact with the greater omentum and coalesce with this in a ribbon which draws a deep furrow in the stomach. The adhesion mentioned as occurring between the peritoneal surfaces, which Rovsing has seen in all stages, from those which commence extensively and are easily loosened to those which are hermetically soldered, fixes the ptosis creases, and these, like partition walls, protrude into the lumen of the stomach.

Maternal gastrocoloptosis is found in women whose abdominal wall consequent upon past pregnancies and confinements has become distended, roomy, and relaxed.

The transverse colon, which is no longer borne up by the small intestine pelotte, is weighed down by the heavy feces so that it hangs like a downward convex festoon suspended by the two flexures. The pull first affects the gastrocolic ligament and the mesocolon, which are elongated and dragged downward. It is quite common to find the gastrocolic ligament elongated to three or four times its normal length, when it is quite thin and perforated in many places. Secondly, it affects the stomach, the suspensory apparatus of which is also little by little stretched and elongated. The constipation and accumulation of fecal matter in the colon resulting from the coloptosis affects with steadily increasing strength the downward drag on the colon and the stomach. It frequently happens that the heavy, feces-filled colon lies right at the bottom of the pelvis and, like an anchor, holds the stomach fixed in its subsided position. Furthermore, the stomach can drag down with it the lower part of the esophagus, and then we encounter gastroptosis in its extreme form.

With maternal ptosis the symptoms differ from that of virginal ptosis in that the stomachic attacks—cardialgia and vomiting—are far weaker, and are often, indeed, absent. It is due to the far more favorable conditions of space, as the stomach is not jammed or liable to be folded and bent as is the case with the virginal abdomen. For the same reason these patients do not generally suffer the innumerable pains and nervous sensations which characterize the others. That it is the distinction as regards space which causes the difference in the aspect of the disease is quite clearly perceived in the transition of a virginal ptosis to a maternal ptosis. So soon as the first confinement is overcome, a great improve-

ment occurs in the condition of the patient so far as these symptoms are concerned.

With maternal ptosis, the constipation with all its consequences is the dominant feature in the aspect. In course of time the effect of the autointoxication from the intestine reveals itself. The patient grows emaciated and sallow, suffers from headache and, in addition, from an ever-increasing sensation of subsidence, from the unpleasant depressing feeling, and from a feeling of fatigue across the loins. The drag of the subsided stomach on the cardia and the esophagus causes constant pain in the left side of the epigastrium, and not infrequently difficulty in the passing of the food through the esophagus, so that a spasm of the cardia may arise—similar conditions sometimes occur with secondary dilatation of the esophagus.

It is characteristic of the disease that all these symptoms improve or vanish entirely with confinement to bed, while they at once recur or become worse with an upright position.

The coprostasis may attain such stages that attacks resembling ileus may occur, and in extreme cases the stomach may also become so loose that volvulus ventriculi is possible.

The treatment by bandage is rarely serviceable in the virginal cases, often extremely helpful in the maternal ones. The effect of a good belt which acts widely over the hypogastrium is most helpful; the pressure must be strong and invariable, and the belt must be attachable in the recumbent position in the morning before the patient rises and while the organs still occupy a normal place. Rovsing suggests a copious, firmly stuffed pelotte placed on a steel-spring belt in which, as with the English double hernial truss, the pressure is exercised by two spiral springs which are movably connected with the large abdominal pelotte in front, and at the back are supported against the sacrum or against the sacroiliac symphysis by one or two small pelottes. These springs can be made as powerful as one wishes.

In cases not suitable to the belt operation is indicated. He reports on 256 patients with complete cures in 62.2 per cent, great improvement in 12.8 per cent of cases, death in 4.6 per cent of cases, and slight improvement or no change in 12 per cent of cases. He notes that in all cases in which the gastrocolic ligament is considerably elongated one does not obtain by gastropexy pure and simple a lifting of the colon sufficient to remove the constipation.

In order to obtain this a special operation is required—*i.e.*, the shortening of the omentum and the mesocolon by basting this with a row of thick catgut threads which begin at the serous coating of the colon and end at the greater curvature. This has proved an ideal method as contrasted with colopexy and omentopexy to the interior abdominal wall, since while these restrict the mobility of the large intestine and in addition often cause adhesions, the shortening of the mesocolon and the omentum raises the intestine without restricting its mobility; moreover, its result seems to be permanent. Where the upper abdomen has been so contracted by corsets as to give no room for the liver and the stomach, it is impossible to fix the stomach in a satisfactory manner without jamming it, just as it is impossible to get the colon sufficiently raised and to straighten out its folds and bends. Excellent results are obtained by doubling the recti muscle.

As to attendant hepatoptosis, hepatopexy should always be performed simultaneously with gastropexy. Rovsing himself has done this in 68 cases. He performs this in part directly with silk sutures which fasten the serous covering on the convexity of the liver to the diaphragm, and in part indirectly with the aid of the ligamentum teres. This is severed after a double ligature, and the topmost end sewn to the diaphragm with strong silk thread, whereby the liver is raised up. The hepatopexy must be performed very substantially with wide scarifications, in order that the heavy organ shall not tear itself loose again, and sink down on the stomach.

When lacing involves the development of a large hypertrophied left lobe of the

liver, which pushes against the curvature minor, and thus makes impossible the replacement of the stomach in its normal position, this lobe should be removed in order to perform gastropexy. Rovsing has done this without loss of blood by simply pinching in two the liver tissue at the base of the lobe with Roux's angiotribe. Only the peritoneum holds, while the liver tissue bursts, and the vessels of the latter do not bleed. The large vessels are seen projecting from the surface and can easily be tied for the sake of safety. The peritoneum is then joined across the broken surface of the liver. If this be insufficient a piece of the omentum can be transplanted. In some cases pain and constipation remain after gastropexy; this is due to the prolapse of one or both kidneys, and the patients do not then recover entirely until after a nephropexy. In ten of Rovsing's cases it was not until after a unilateral or a bilateral nephropexy that Rovsing succeeded in obtaining an absolute result.

Gastroenterostomy is condemned without qualification, it being held that it simply adds to the misery of the patient, and cases are cited to show that it was only after the repairing of this operation that patients again became comparatively comfortable.

Rovsing's method of operating is as follows: Parallel with the lesser curvature are laid three strong silk threads in and out through the serous coating of the anterior surface of the stomach, leaving the pyloric portion free. The upper thread is placed close under the lesser curvature, and the two others with an interval of about 2 cm. are placed in such a way that the greater curvature and a rather large piece of the wall above this are left free. With a fine needle the serous coating between the threads is scarified in all directions, also the surface of the parietal peritoneum, and eventually that part of the under side of the liver to which one wishes the stomach to adhere. The ends of the silk thread are led out as far as the side of the rib-curvature, and that on the right at about 3 cm. to the right of the center line. The peritoneum is now closed with catgut, and the fascia and skin with aluminum bronze. After the line of wound has been covered with collodion and cotton-wool, the silk sutures are tied over a glass plate covered with sterile gauze, the dimensions of which are a little larger than the stomach surface which has to be fixed. In this way it follows that the anterior surface of the stomach lies flat and close to the abdominal wall, without shrinkage and folding. These threads are left for four weeks and are then easily removed. A perfectly secure and solid adhesion is thus obtained.

A CONTRIBUTION TO THE STUDY OF THE SURGERY OF THE HEART.

WAGNER (*Deutsch. Zeitsch. f. Chir.*, 1912, cxix, 221) quotes Erich Hesse as claiming, on the basis of 21 operations, that in 50 per cent of all cases an exact diagnosis of heart wound is impossible. Of seven cases operated upon by Wagner in which a diagnosis of heart wound had been made before operation, this was confirmed by operation in only five; in two the bullet had passed by close to the heart. A wound within the heart area does not, of necessity, indicate a heart wound, nor does the direction of the bullet always furnish a good guide. In the above five cases of heart wound confirmed by operation there were no abnormal sounds heard over the heart. Erich Hesse noted such sounds in only one of his 21 cases. Wagner observed an increase of the area of heart dulness in only one of his cases. Tamponade and strangulation of the heart is the most important symptom when it is present, but Wagner observed it only once in the five cases confirmed by operation, and Erich Hesse found it only eight times in his 21 cases. Frequently the blood escapes from the pericardium through an opening into the pleural cavity. Anemia is usually present, but is not characteristic of heart wounds. The subjective symptoms of precordial distress, pain in the heart region, feeling of pressure and dyspnea, can aid in the diagnosis, but are not positive signs. Early diagnosis, therefore, is beset with

difficulty, but is very important for a favorable outcome from operation. It is known that severe heart wounds can be almost symptomless.

As the result of his studies, Wagner believes that as soon as a probable diagnosis of heart wound can be made the heart should be exposed promptly, in civil life, by operation. This rule does not hold in war. He reports a case in which a heart wound was assumed to be present with certainty, and in which operation showed positively that the heart was not wounded. There was hemopericardium and hemopneumothorax, but no wound of the heart. Undoubtedly the patient would have recovered without operation. The probability is that the bullet took a course tangential to the heart, opened the pleura, and passed through the lung. Lundmark reported a case which was very similar to this one.—*American Journal of the Medical Sciences,* January, 1913.

OBSERVATIONS ON A CASE OF MEDIASTINOPERICARDITIS TREATED BY CARDIOLYSIS.

Dunn and Summers (*American Journal of the Medical Sciences,* January, 1913) report the case of a twenty-nine-year-old man short of breath, early tiring, bloating at times, coughing, exhibiting scanty, high colored urine, and spitting of yellowish sputum in which there was some blood. He had a dusky-red face, turgid neck veins, with a marked venous diastolic collapse and violent precordial pulsations, consisting of distinct, rather slow systolic retraction with a rapid vibratory diastolic thrust. There was a systolic retraction of the left costal arch; Broadbent's sign was present. The respiration was rapid and upper thoracic in type. A marked diastolic shock was palpated. The apex lay in the sixth interspace in the anterior axillary line. Cardiac dulness extended 3 centimeters to the right of the sternum, and to the left as far as the anterior axillary line in the sixth interspace. The area of heart dulness did not change with change of position. Auscultation revealed a loud systolic murmur heard over the entire precordium; this murmur was best heard at the apex. The respirations were rapid and of the upper thoracic type. The left lower cavity was obliterated. The right cavity contained a moderate amount of fluid. The abdomen was much distended. Ascites was present. The scrotum, thighs, legs, and feet were moderately edematous. The urine contained hyaline and granular casts and red blood cells. Three weeks' rest restored compensation; the heart action became regular, the murmur entirely disappeared, and the heart sounds became clear. Cardiolysis was then performed, the purpose of the operation being to do away with the costopericardial adhesions and give the enlarged organ freer play.

A U-shaped incision, commencing four inches from the sternum, was made, with its base directed toward the left shoulder, the upper limb skirting the lower border of the second rib as far as the sternum, thence the curved portion overlapping the left border of the sternum to the cartilage of the sixth rib, the lower limb continuing downward, outward, and then upward to the anterior axillary line. A musculocutaneous flap down to the ribs was raised, and the third, fourth, fifth, and sixth ribs and their cartilages covered by their periosteum and perichondrium were resected flush with the sternum. This exposed the pericardium and left pleura in an area measuring, from above down, five inches; from within, out, four and one-half inches.

The pericardium was found adherent to the chest wall and the pleura somewhat thickened and adherent. It was not necessary to ligate the internal mammary artery, as the costal cartilages were first divided externally to the course of this vessel and then the inner stumps were removed. The wound was closed with a cigarette drain in its lower inner angle, which was taken out at the end of twenty-four hours. The operation was followed by a mild bronchopneumonia, from which the patient's compensation was little disturbed. In other respects convalescence was uneventful.

Brauer postulated that for the success of the operation the following conditions must be present: diastolic shock, systolic retraction at the apex, and the ability of the heart muscle to compensate. If from myofibrosis, myocardial degeneration, or from valvular disease the heart is unable to compensate, the operation will be futile. To-day we must consider also as generally contraindicated those cases in which the pericarditis is part of a tuberculosis; all such cases in which operative interference has been tried have been benefited little. If the pericarditis is part of a general polyserositis, the results will be bad. Schlayer justly maintains that the results of cardiolysis do not depend alone on the condition of the heart. Attention must be given to the serous membranes. In 10 out of 12 cases of his series one and frequently both pleuræ were involved. He believes that the pleuræ in mediastinopericarditis show an extraordinary tendency toward inflammatory processes, and that the processes are by no means transitory, but make for recurrence in the majority of cases. The ascites present must not be considered to be secondary in all cases to cardiac impairment. If the ascites disappears, with the restoration of compensation, it is probably of cardiac origin; if it does not, it is dependent on a coexistent inflammatory condition of the peritoneum.

Schlayer considers two types of mediastinopericarditis—the cardiac and the polyserositic. Anatomically, and to a less extent clinically, pericarditis may be divided into the following types: diaphragmatic, pleural, chondrocostal, and mediastinopericarditic. The cases may be said almost never to be of a pure type. The existence of the chondrocostal type is necessary if we are to expect anything from operative interference. The heart is hitched fore and aft to the chest wall and to the vertebral column by involvement of the pleura, pericardium, and posterior mediastinum. It is at this double pull that our therapy is directed.

An additional indication for rib removal in cardiac disease has been advanced by Alexander Morrison. In a patient with cor bovinum from mitral and aortic disease who suffered from frequent and severe "anginoid" pains that resisted treatment, he removed 4½ inches and 5½ inches of the fifth and sixth ribs respectively. The result was subjectively and objectively gratifying, so that the patient was able to earn his living, which he had previously been unable to do. He was reported much improved one and one-half years after the operation.

Morrison's reasoning was as follows: Experiments show that direct muscle stimulation of the eviscerated heart induces contraction. (One of the authors had been able to induce contraction in the exposed heart of a five-months-old fetus, four hours after birth, by lightly tapping the right ventricle with a thumb forceps.) The constant thumping of the heart against the stiff and confining chest wall gives rise to a cardiac erythism. Morrison believes that one of the causes of pain and increased irritability in greatly hypertrophied hearts is this impact of the forcefully beating heart on the chest wall. The substitution of a soft tissue covering for the heart instead of a bony wall admits of free action of the hypertrophied heart without the constant hammering of the chest wall. The free play afforded the greatly hypertrophied and dilated heart by the operation was noticeable in the writers' case. The correctness of Morrison's reasoning must be determined by extensive clinical application of this theory. They suggest the term cardiac decompression in place of thoracostomy, as used by Morrison, because it better describes the purport of the operation.

THE INVESTIGATION OF PUNCTURE FLUIDS AS AN AID TO DIAGNOSIS AND TREATMENT.

Horder (*British Medical Journal,* Nov. 9, 1912) states that the cytological examination of pleural fluid enabled Widal and Ravant to enunciate a formula by which, with a very high degree of probability, an effusion is known to be of tuberculous or of pyogenetic origin. A marked prepon-

derance of lymphocytes is in favor of tuberculosis, whereas a marked preponderance of polymorphonuclear cells is in favor of pyogenetic infection. With somewhat less certainty the formula may also be applied to other than pleural exudates. Chemical examination of puncture fluids from serous sacs enables us to judge to what degree they are transudates or exudates. The cerebrospinal fluid obtained by lumbar puncture in cases of parasyphilitic disease is often shown to contain a globulin, demonstrable by the ammonium-sulphate test. Excess of urea in this fluid is, perhaps, one of the surest signs of renal inadequacy. The help derived from bacteriological investigations of puncture fluids is everywhere apparent; the demonstration of the causal microbe in meningitis, in arthritis, in pleural effusion, and in pneumonia is an every-day occurrence, when by no other method could it possibly be undertaken. These are some of the specific points that are capable of elucidation. In not a few instances the very existence of the disease is determined by the puncture, when without it the diagnosis is a matter of probability at most. The best instance of this is the diagnosis of meningitis. Several of the symptoms of meningitis are by no means pathognomonic, and are occasionally seen in the toxemia of typhoid fever, pneumonia, septicemia, and middle-ear disease. On the other hand, the less equivocal signs of meningitis are frequently absent early in the disease, when diagnosis is of paramount importance. From the state of ambiguity and speculation in which the practitioner is placed he is able again and again to arrive at a certain diagnosis by means of lumbar puncture.

The first step in successful treatment is an accurate diagnosis, and this, as has been seen, is much assisted by the investigation of puncture fluids. The puncture itself is by no means devoid of therapeutic value at times. The drainage of a pleural effusion and of an ascites has been known as a means of treatment since the earliest days of medicine. Repeated lumbar punctures are certainly of benefit in certain cases of meningitis, whether due to the meningococcus or to other infections. Pyemic joints may not seldom be saved from free incision by judicious aspiration, and the same applies to some forms of tuberculous abscess. A patch of bronchopneumonia will occasionally resolve, and the disease comes to a sudden end a few hours after a lung puncture.

REVIEWS.

PRINCIPLES AND PRACTICE OF OBSTETRICS. By Joseph B. De Lee, A.M., M.D. Large octavo of 1060 pages, with 913 Illustrations, 150 of them in Colors. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, $8.00 net; Half Morocco, $9.50.

This volume is the outgrowth of a former contribution of the author, entitled "Notes on Obstetrics," which was used for fourteen years as a text-book in the Northwestern University Medical School. The subject-matter is divided into four parts: The Physiology of Pregnancy, Labor, and the Puerperium; the Conduct of Pregnancy, Labor, and the Puerperium; the Pathology of Pregnancy, Labor and the Puerperium; and Operative Obstetrics.

The book is unusually comprehensive. Dr. De Lee has taken up nearly every subject in obstetrics which may confront the practitioner, or interest and instruct the student. The text is so arranged by the use of small and large type that the essential parts of the narrative may be read to the exclusion of the minutiæ and details.

The matter is presented clearly and thoroughly, and exhibits the mature judgment, the large experience, and the extensive acquaintance with the literature of the author.

Among the particularly good features are the excellent description and illustrations of the changes in the uterus and pelvic

organs, incident to pregnancy. The account of the action of the round and uterosacral ligaments during labor is interesting. The description of the mechanism of labor and the advice given concerning its conduct, especially teaching the patient to utilize her pains to the best advantage, and the value of the various positions, are most excellent and practical.

The author emphasizes the fact that a large number of labors are abnormal, and dwells on the propriety of sending a large proportion of maternity cases to the hospital. He gives sensible directions for the care of the breasts and nipples during pregnancy and the puerperium. The urgent recommendation he makes for close attention to the heart sounds during the second stage is most important, and is conducive to a lower rate of fetal mortality. Particularly valuable is the section on the delivery and the examination of the placenta.

The chapters on "Prolapse of the Cord," "Placenta Previa," "Contracted Pelvis," and "Postpartum Hemorrhage" deserve especial notice. It is gratifying to note that the author has given up, with few exceptions, intrauterine or puerperal treatment in puerperal sepsis. The text and the illustrations of the use of the forceps might be improved, and it is especially unfortunate that Scanzoni's maneuver in the delivery of posterior positions of the occiput is not given the attention it deserves. We admire and agree most heartily with what the author says concerning episiotomy. There can be no question that a well-done operation of this sort, saving as it does sometimes the life of the child, and preventing subcutaneous rupture of the perineal muscles, is a most valuable procedure. We do not consider the author happy in his selection of the nomenclature descriptive of the various presentations and positions.

The illustrations are well chosen, and nearly all are new. They are very liberally distributed. The touch pictures are ingenious, and serve as an excellent method of teaching what can be learned by palpation.

As a whole the book will be a valuable one to the student and to the practitioner—possibly more valuable to the practitioner than to the student, because there is so much in the text that it will be difficult for the student to grasp it all. To the man, however, who is practicing obstetrics, this volume will supply more information upon more points than any other single volume with which we are familiar. The printing of the text and of the pictures has been admirably done, and is a creditable achievement of the publishers. B. M. A.

DISEASES OF THE EYES. By C. Devereux Marshall, F.R.C.S. London: University of London Press. Published for the University of London Press, Ltd., by Hodder & Stoughton and Henry Frowde. Price $3.75.

This book, to use its author's own language, is chiefly designed for the use of students and those practitioners who, while doing a certain amount of work, cannot be considered as experts. Necessarily, many subjects are omitted or barely mentioned, the idea being to make the book as practical as possible. Necessarily, also, the statements are often dogmatic. For example, while it is true that atropine, or at least an active mydriatic, is essential in the determination of the refractive error of persons "up to about sixteen years of age," and "very desirable in many up to about twenty-five years of age," it certainly is not in accordance with the experience of ophthalmic surgeons on this side of the water that after that period of life the majority of cases can be worked out quite as well without a mydriatic, and that after thirty-five years of age it is not necessary to paralyze the accommodation. On the contrary not only is a mydriatic (not atropine, but homatropine) most necessary after thirty-five, but it is often necessary, or very useful, at a much later period of life.

In that troublesome affection, relapsing abrasion or erosion of the cornea, it certainly is not a universal experience that atropine gives more relief than anything else. Cocaine is properly condemned, but why holocaine, which approaches in value a

specific remedy, is not mentioned is hard to understand. So, too, failure to discuss the value of autogenous vaccines in the treatment of various types of infected ulcer of the cornea is unfortunate. It is doubtful if many surgeous would agree with Mr. Marshall that uric acid seems to be the most likely cause of scleritis. Surely most of the modern investigations indicate that the influence of tuberculosis is far from innocent in this disease.

It is a little hard on the elaborate operative work which has been done for the relief of pulsating exophthalmos to say that "several cases have been cured by ligature of the common cartoid," when, in point of fact, statistics indicate that cure, or essential improvement, has occurred in not less than 60 per cent of the operations, with a death-rate of 10 per cent. No mention is made of the very important orbital operations for the relief of this disease. Few ophthalmic surgeons will agree with the author that the Jaesche-Arlt operation is a satisfactory one. The Young-Helmholtz and Hering theories of color blindness are summarily dismissed, and the one elaborated by Eldridge Green warmly advocated, "because there is not one single fact relating to color vision which cannot be explained by it."

The book contains much that is good, and subjects often too diffusely treated are happily condensed. There is no doubt that Mr. Marshall's book will be welcomed by students who have not time to read larger manuals, and by practitioners who wish to know something about the eye, but are unwilling or unable to get their information from more elaborate ophthalmic treatises.

G. E. DE S.

THE TREATMENT OF DISEASE IN CHILDREN. By G. A. Sutherland, M.D., F.R.C.P. Second Edition. The Oxford University Press, New York, 1913. Price $3.75.

The object of Dr. Sutherland in writing this book has been to make it a practical guide to the young practitioner in the treatment of diseases of infancy and childhood. The section on the acute specific fevers and diseases of the skin is new, and he tells us that the new methods of treatment which he discusses have been personally tested and introduced only because they have been found to be efficacious. For this reason he has considered it wise to give one full, definite line of treatment, such, for example, as he himself would pursue, rather than to discuss all the remedies which have been employed by other practitioners. The book, of course, deals first with the feeding of infants and with the disorders or diseases which arise from errors in diet. It then goes on to the consideration of tuberculosis, syphilis, and rheumatism, following this chapter by one upon the specific fevers. Further chapters follow upon the treatment of the alimentary and respiratory systems, the cardiovascular system, the nervous system, the urinary system, and the skin. At the close of the volume there is what he calls a pharmacopœia or a formulary, in which a very considerable number of typical prescriptions are given. Curiously enough, 26 pages are given to diseases of the genitourinary apparatus, but only 23 to diseases of the cardiovascular apparatus. It is proper to state in addition to the prescriptions given in the formulary which we have named that a considerable number of typical prescriptions are embodied in the text.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. Third Edition, Completely Revised and Rewritten. Edited by Thomas L. Stedman, A.M., M.D. To be completed in Eight Volumes. Volume I. Illustrated in Black and White and Chromolithographs and with Halftones. William Wood & Company, New York, 1913. Imperial Quarto, Muslin, $56.00 for the Set; Leather, $64.00; Half Morocco, $72.00.

Buck's Reference Handbook of the Medical Sciences is widely known amongst practitioners who have been book buyers throughout the last two decades. That an encyclopedia of medicine filling eight volumes should have reached a third edition is certainly an evidence of its value. In the present edition the articles have been thoroughly revised and in many cases so largely rewritten that the work may be practically considered a new one. The first volume contains 936 pages, and as it is arranged alphabetically, its titles extend from "Aachen" to "Bacteriuria." The editor, Dr. Stedman, is

as well known to the profession of his day as was Dr. Buck, the original editor, to contemporary medical men. As he is the Editor of the *Medical Record,* of "The Twentieth Century Practice of Medicine," and the author of "Stedman's Medical Dictionary," it is manifest that he has brought to his work long training, wide experience, unbounded enthusiasm, and tireless energy. It is not only complimentary to the publishers, authors, and editors of this standard work that its qualities have been so thoroughly appreciated by the profession in the past, but it is a tribute to medical men as well in that they have been ready and willing to lend their aid pecuniarily to such a masterpiece of compilation. The revisers and authors of the articles which this volume contains are practically without exception men who have made their mark in medicine and are recognized in this country and abroad, in many instances, as authorities in their particular specialties.

DIET AND HYGIENE IN DISEASES OF THE SKIN. By L. Duncan Bulkley, A.M., M.D. Paul B. Hoeber, New York, 1913. Price $2.00.

Dr. Bulkley is well known to the medical profession for his numerous contributions upon diseases of the skin. For many years he has delivered lectures to undergraduates and graduates, and has nearly always seized the opportunity to embody these lectures in some publication, as a medical journal or in a small brochure. For example, one series of lectures dealt with the relation of diseases of the skin to internal disorders, and another dealt with the principles and applications of local treatment in diseases of the skin. In all instances the lectures in printed form have reflected the experience of the writer. In the present volume he has not only given a concise statement of his personal views, but brings forward recently adduced scientific evidence in their support. The book contains an appendix in which he gives practical dietaries for the exclusion of animal food, dietaries often essential in certain skin diseases.

The volume serves to impress upon us the importance of regarding skin diseases as due to primary metabolic causes, with special reference to the development of unusual eruptions, on the one hand, and such common diseases of the skin as eczema and acne on the other. The dietary appendix which we have spoken of will prove particularly useful to the general practitioner, since by its means he will be able to devise diets not only for cases of skin diseases but for other patients who need dietetic regulation.

MEDICAL MEN AND THE LAW. By Hugh Emmett Culbertson. Lea & Febiger, Philadelphia, 1913. Price $3.00.

There can be no doubt that a book of this kind has long been needed by the medical profession. It is true that a very considerable number of works exist which deal with medicolegal matters, and often the chapters in the early part of such works deal to some extent with the legal status of the physician. As a rule, however, the author takes up medical jurisprudence to the exclusion of everything else. This is not the chief object of the volume before us. It deals with the duties, rights, and liabilities of the professional man toward the public as settled by law, and also the legal relations of the regular profession to the practitioners of the many schools of healing now in vogue, as well as the status of such healers in the eyes of the law. So thorough is it in many respects that it gives interesting and valuable information to members of the legal profession concerning the points at issue. After an introduction it defines the meaning of a considerable number of names which are applied to various types of practitioners, defining what is meant by the term physician, consulting physician, surgeon, specialist, osteopath, bone-setter, magic healer, etc. Then follows an exhaustive chapter upon who may practice medicine and surgery; a shorter one upon the relation of the physician to the patient, and a longer one upon the laws governing compensation. A very important chapter is that dealing with malpractice, and still another upon the criminal liability of physicians and surgeons, with one dealing with their status as witnesses, and another with their right to protect professional reputa-

tion. The last chapter deals with wills, a subject with which the physician comes in contact, either when the will is made or after the decease of the patient.

The type is large, easy for the eyes, and the book in its entirety makes very interesting practical reading for us all. It ought to prove popular and have a large sale.

DISEASES OF THE SKIN. By Willmott Evans, M.D., B.S., B.Sc., F.R.C.S. Oxford University Press, New York, London, 1912. Price $3.75.

This is one of the smaller books upon diseases of the skin, covering less than 400 pages in large type, containing finer illustrations than most books dealing with this subject. The text is concise, well written, and clear. A considerable part of the book is also devoted to treatment, not only in the way of naming drugs, but in giving actual prescriptions which may prove useful.

We are so prone in this country to consider poison-ivy the most frequent cause of dermatitis venenata that it is interesting to note the statement of the author that the primrose is in England the most common agent in causing this lesion, but he recognizes that poison-ivy is the most frequent factor on this side of the Atlantic, and that since its introduction into England the frequency of poison-ivy irritation is increasing. Concerning the treatment of these conditions the section devoted to this subject is the least satisfactory in the book.

We feel certain that this book cannot take the place of the more exhaustive and complete manuals such as that of Stelwagon, Hyde, or Crocker, but as a brief summary it can be relied upon.

A MANUAL OF ELEMENTARY ZOÖLOGY. By L. A. Borradaile, M.A. Oxford University Press, New York, 1912. Price $3.75.

The design of the author has been so to treat of the animals which are most often studied in courses of elementary zoölogy as to introduce the student by this means to the principal problems of the science. The author assumes that the student has an elementary knowledge of chemistry and physics. A large number of illustrations are included in the volume, and the author has put his text together in such a way as to make very interesting reading both for the undergraduate student, who may be just entering upon biological work, and for the physician who likes to study elementary comparative anatomy and physiology. Many physicians having a taste for science, aside from medicine, desire to possess a book which will interest, amuse, and edify them, but have not time to devote to exhaustive manuals. This book will meet their needs.

MEDICAL DISEASES OF CHILDREN. By T. R. C. Whipham, M.A., M.D., M.R.C.P. The Oxford University Press, New York, 1912. Price $3.75.

We confess to feeling a little disappointment in going over this book that the author has condensed it to such an extent that much valuable information has necessarily been left out. It is, however, copiously illustrated, and the illustrations, as a rule, are good, being much better executed and representing conditions of disease more effectively than is often the case. In the method of condensation, however, the author has been quite successful, and for collateral reading the book can be recommended. The style leads one to believe that it is founded upon Notes used in Lectures, and that it will be useful to students following the lectures of the author rather than to students of other schools.

A MANUAL OF IMMUNITY. For Students and Practitioners. By Elizabeth T. Fraser, M.D. The Macmillan Co., New York, 1912. Price $1.60.

The authoress of this book, who was lately Assistant Bacteriologist to the Glasgow Royal Infirmary, says that owing largely to the almost wanton introduction of new terms the science of immunity has acquired an aspect of complexity which may well suffice to scare the busy general practitioner from any attempt to study the subject. That the average practitioner will agree with her in this statement we doubt not, and we feel confident that he will furthermore readily support the proposition she advances that this is surely a misfortune. Furthermore, we believe that her statement will generally be accepted that the doctor

who uses vaccine or antitoxin or discusses the significance of a Widal or Wassermann reaction must either equip himself with the knowledge of the fundamental facts of immunity or be forced into the position of a passive transmitter of ideas which are entirely beyond his grasp. The authoress has carefully carried out a plan designed to correct the difficulties over which the average practitioner, who has not had time to keep abreast of laboratory details, undoubtedly stumbles, having enough knowledge only to guide him to some extent and not enough to enable him to walk easily in the road which he should follow.

OBSTETRIC AND GYNECOLOGIC NURSING. By Edward P. Davis, A.M., M.D. Fourth Edition, Thoroughly Revised. The W. B. Saunders Co., Philadelphia, 1913. Price $1.75

There are few medical authors who have contributed more in the way of books to the literature of their department than has Dr. Davis, and it may be truthfully said that few of those who have attempted a similar number of literary tasks have succeeded in presenting a series so uniformly of the first class. The first edition of the present book appeared twelve years ago, and we are not surprised that it has reached its fourth edition at this time, since it embodies not only the views of a man of large experience in private practice, but one who has been in charge of an active maternity hospital for many years. We believe that every nurse in the course of her training in a hospital should be instructed to use this book for information along the lines that its title covers, and many graduate nurses, even those who have had a good training in maternity hospitals, will refresh their memories and increase their efficiency by its perusal. One of the illustrations which shows a patient in the so-called Walcher position serves to remind us of the fact that even although this position may be of service in aiding the practitioner, it is practically always productive of great suffering on the part of the patient after the operative procedure is over. This suffering is perhaps impressed more sharply upon the mind of the general practitioner than it is upon the operating gynecologist or obstetrician. We have repeatedly seen cases in which the strain of this posture upon the sacroiliac joint has caused the patient far more suffering than the operative procedure itself, or its immediate results, and we have often wondered whether, however useful it may be in some cases, it is necessary to resort to it as frequently as seems to be done by practitioners in these special lines of work.

SAFEGUARDING THE SPECIAL SENSES. By Henry O. Reik, M.D. Illustrated. The F. A. Davis Company, Philadelphia, 1912. Price 75 cents.

The author tells us that fifteen years of experience as a specialist in diseases of the eye, nose, and throat has convinced him that many patients suffer from diseases of these parts through ignorance of their normal use and from neglecting to properly care for them. He even goes so far as to intimate that the desire of some children to play truant may be due to eye-strain, and that a proper pair of glasses is in reality the remedy for truancy. The first 60 pages deal with disorders of the eye and eyelids; the second chapter deals with similar conditions in the ear and covers 29 pages. The last chapter discusses diseases and abnormal conditions of the nose and throat. We scarcely know what class of readers will find this book the most useful. It is certainly much too elementary for medical men, and perhaps too thorough to be put in the hands of the average layman, particularly if that layman has an imaginative faculty. Placed in the hands of a well-balanced man or woman of adult years who really wishes to know what is best for himself or herself or for children that are under their supervision, it will undoubtedly give much useful and practical information.

HEALTH AND LONGEVITY THROUGH RATIONAL DIET. By Arnold Lorand, M.D. The F. A. Davis Co., Philadelphia, 1912. Price $2 50.

Dr. Lorand is a practitioner of Carlsbad, and points out that few physicians have the opportunity that he has to regard the harmful consequences of a faulty diet. We are glad to see that he points out that however

harmful foods may be which contain uric-acid-forming constituents, nevertheless, physicians often make a mistake in failing to recognize that many such foodstuffs contain nutritive salts, particularly valuable in the growth and development of the body, which cannot be obtained from other sources, the deprivation of which induces ill health. So, too, he emphasizes the importance of regulating the diet according to the life of the individual and the means by which he earns a living. Dr. Vaughan, of the University of Michigan, has written an introduction of a little over a page in which he states that while he may take exception to some of Dr. Lorand's views he regards the text as singularly free from fads, and can cordially commend it. Naturally the opening pages of the book deal with the influence of food upon man and the fundamental laws of rational feeding. A very important chapter deals with the good and evil effects of various foodstuffs, and another upon vegetarianism, its advantages and disadvantages. There is also an interesting chapter upon increased muscular power resulting from suitable diet, and even a chapter upon hints for those obliged to take their meals in restaurants. The final chapter, which, however, covers less than six pages, deals with the relationship of old age to longevity.

A Diabetic Cook-book. By Anna Colby Knowlton. Published by the Author, Englewood, New Jersey, 1912. Price $2.00.

Although rather a high price is asked for a small book of less than one hundred pages, it must be admitted that the compiler has brought together a goodly number of recipes for this class of patients. She has also had a sufficient amount of commercial sense to name a considerable number of proprietary products designed for diabetics, and to call attention to the advertisements in the back of the book, which we presume has enabled her to put her recipes into type. As she is not a member of the medical profession these ethical objections need not militate against the physician obtaining the directions, which he will often find useful in treating this difficult class of patients. The book will help the practitioner materially in varying the diet of diabetics without transgressing the dietetic rules which are so essential in these patients.

Indexed Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Second Series. Volume XVII: Suaheli-Tustut.

The Indexed Catalogue of the Library of the Surgeon-General's Office of the United States Army is so well known to literary medical men that it is only necessary to announce that the seventeenth volume of the Second Series has now appeared. This volume includes 2357 Authors' Titles, representing 3850 volumes and 8490 pamphlets. It also contains 3571 Subject Titles on Separate Books and Pamphlets and 3698 Titles of Articles in Periodicals. It is interesting to note that the Library now contains 178,741 bound volumes and 317,740 pamphlets. Taking into consideration the two series of the Indexed Catalogue that have been published, we find that they contain 289,826 Book Titles and the titles of 1,043,250 journal articles.

Genito-urinary Diseases and Syphilis. By Henry H. Morton, M.D. Third Edition, Revised and Enlarged. Illustrated. F. A. Davis Co., Philadelphia, 1912.

This book represents an admirable presentation of the present status of genito-urinary diseases and syphilis, setting forth with surprising brevity, considering the subject-matter considered, the principles and practices best adapted to the needs of the practitioner for whose use in particular the book is essentially designed. In arrangement the work follows the lines recognized as classical in text-book writing. The final sections are devoted to Chancroids, Syphilis, Impotence and Sterility. Thereafter there is a list of genito-urinary instruments required for office use, with a list of instructions and an appendix containing formulæ for staining.

The illustrations are excellent and illuminating. The teaching is essentially that of the present day. The various methods are well covered, with clear indications for their use. In the treatment of acute gonor-

rhea silver solutions are given the preference locally; sandal oil internally. The Oudin current is strongly commended for the microscopically benign tumors of the bladder. Where operation is performed subsequent resorcin solutions are suggested, beginning four or five weeks after the wound has healed with a one-per-cent solution, the strength being gradually increased in several months to 5 per cent. For infiltrating tumors involving the ureteral region operation is not advised.

It is interesting to note that the operation of litholapaxy is illustrated, described, and in suitable cases warmly commended. The section on Hypertrophied Prostate is a particularly valuable one.

In the treatment of Syphilis it is stated that the drugs which are the mainstay are mercury, iodide of potassium, and salvarsan, given in this order. Nor is Zitmann's decoction entirely forgotten.

TREATMENT AFTER OPERATION. By William Turner, M.S., F.R.C.S., and E. Rock Carling, B.S., F.R.C.S. With a Chapter on the Eye by L. V. Cargill, F.R.C.S. University of London Press, London, 1912. Price $3.75.

This book contains many useful suggestions and excellent prescriptions. It is written evidently by men of large routine practice, richly endowed with loyalty to the methods of their own institution, and perchance therefore blinded to simpler, more efficient, and better methods sometimes practiced elsewhere. None the less the book contains many useful suggestions which may be read with profit by every dresser and interne.

OXFORD MEDICAL PUBLICATIONS. THE SURGERY OF THE SKULL AND BRAIN. By L. Bathe Rawling, F.R.C.S. Henry Frowde, Oxford University Press, Hodder & Stoughton, London, 1912.

This beautifully printed, excellently illustrated, clearly written and systematically ordered volume is one in which the author, without attempting to interject his personal views, has condensed the work of those especially skilled in this department of surgery, and so formulated it as to make it accessible, intelligible, and serviceable to the surgeon who has not specialized in this department of his art. There is a brief first chapter on Craniocerebral Topography; thereafter another devoted to Special Technique and Operations on the Skull and Brain. Then follows an extremely lucid surgical discussion of the skull and brain lesions and their treatment. The book is worthy of high praise.

MINOR SURGERY. By Leonard A. Bidwell, F.R.C.S. Second Edition, Illustrated. University of London Press. London: Published for the University of London Press, Ltd., by Hodder & Stoughton and Henry Frowde, 1912.

This always attractive title to a book now in its second edition suggests the individual refinements in technique and dressing found in abundance in this work. It covers the subjects of minor surgery, minor operations, injections, plaster-of-Paris splints, bandaging, the treatment of emergencies; including the removal of wax from the ear, drowning, and stabs of the abdomen, preparations for operation and treatment after an operation.

The book is characterized by sound common sense throughout, but in some instances by elaboration without betterment of methods which are elsewhere extremely simple.

THE PRACTICAL MEDICINE SERIES. Under the Editorial Charge of Gustavus P. Head, M.D., Charles L. Mix, A.M., M.D. Volume IX: Skin and Venereal Diseases. Miscellaneous Topics. Edited by W. L. Baum, M.D. Series 1912. The Year Book Publishers, Chicago.

This is an excellent résumé of the year's progress in this branch of medicine. In the brief space enclosed it is impossible for it to be widely comprehensive, but in the main those articles of greatest value have been clearly abstracted, thus enabling the general practitioner at the least expenditure of time to put himself abreast of the most progressive thought of the day as represented by current medical literature. In addition to skin and venereal diseases, genito-urinary medicine and surgery are briefly considered, as are medical history, medical education and licensing, medico-legal questions, insurance and contract practice, eugenics, sexual crimes and disease, and evolution.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The nation has sustained a severe loss by the death of Captain Scott and his heroic comrades in the antarctic, but we are able to look back with pride upon the way in which they struggled against overwhelming odds and met their end with fortitude. There was a remarkable demonstration of sorrow for their fate at the requiem service held at St. Paul's Cathedral, at which the King was present. Polar expeditions have of late been accompanied by so little loss of life that the news came as a great surprise, but at least the relatives of the dead men are spared the distress of uncertainty as to their fate.

We have not yet received full reports as to the scientific results obtained by the explorers, but the first cables lead us to suppose that these will be of great value and will be of immense assistance in determining the geological history of the Southern Continent. As a profession we especially deplore the loss of Dr. Wilson, who, besides being a scientist, was an artist of no mean order.

In 1910 a Research Studentship was founded as a memorial to Professor Tyndall on condition that it was utilized in some manner to conduce to the benefit of the miner, either physically or intellectually. The first holder of the studentship has carried out a research on the eye trouble known as "nystagmus," from which 10 to 24 per cent of all underground workers suffer. His conclusions have just been published in book form, and though it offers little hope of recovery to any of the afflicted, it shows the true cause of the disease. The investigator has shown that the disease was unknown before the introduction of the safety-lamp, that improvement of illumination diminishes the incidence of the disease, that the disease is practically unknown in districts where naked lights are used, and that the skilled workmen—the most subject to eye-strain—are more often affected than men of other grades. The chief preventive measures advocated are the improvement of the candle-power of safety-lamps, careful cleaning of lamps, and the use of proper reflectors. As the nation loses £100,000 yearly from the disablement of workers by this one disease alone, any effective preventive measures ought to be carried out in their entirety, not only from a humanitarian point of view, but also as a matter of business.

The Board of Agriculture has issued a drastic order to local authorities as to bovine tuberculosis. Animals afflicted with tuberculosis and dangerous to human health are to be slaughtered, and the Treasury is to refund the local authorities half the net amount payable as compensation. According to some authorities no less than 70 per cent of all cattle in this country are afflicted with tuberculosis in some form or other, though of course all forms are not dangerous to human life. As the disease is so wide-spread it will probably be necessary to devise some form of segregation for those animals who are only slightly infected, and byres which have been used by animals in an advanced stage of tuberculosis will have to be condemned. It only seems just that the Treasury should pay most of the money needed for compensation instead of throwing it upon local rates, as the measure is intended for the protection of town dwellers and country dwellers alike.

The organized treatment of human tuberculosis is gradually being evolved from the chaos which attended the inception of the Insurance Act régime. Special accommodation is being reserved in existing sanatoria for insurance patients, and though at present there is not sufficient room to accommodate all patients who need institutional treatment, a great improvement will probably take place in the course of a few months. In many districts arrangements of a purely temporary kind have had to be made. From a statement in Parlia-

ment we learn that Scotland, Ireland, and Wales have all been able to make more satisfactory arrangements for institutional treatment than England herself. Although on the whole the insurance panels have secured a sufficient number of doctors to work the act efficiently, there is a great deal of grumbling at the amount of clerical work and bookkeeping required by the Insurance Commissioners, and unless matters are simplified in this direction there will probably be another revolt at the end of the first quarter of the administration of the act.

The annual Poor Law Conference brings together representatives of Boards of Guardians from all parts of England and Wales. Major Leonard Darwin, a well-known eugenist, urged that the Mental Deficiency Bill ought to be passed into law and efficiently administered. Unfortunately the government, oppressed by an overwhelming load of legislation, has been obliged to drop this bill for the present. Major Darwin said that the main hope of eugenists depended upon a systematic segregation of feeble-minded children, and he declared that no relief, charitable or otherwise, ought to be given to parents who produce a mentally defective child. He defined a defective as one who is unable to profit by an ordinary education. A discussion on the treatment of poor-law children showed that the boarding-out system meets with considerably more favor than institutional treatment. After-care committees were also recommended to look after poor-law children who have been placed out in situations, and to assist them with money and advice until they are economically independent.

The recommendations made by the Royal Commission on Vivisection are about to be put into operation. The inspectorate is to be increased to four by the appointment of two additional members, and the present senior inspector is to be made chief inspector for the whole country. These new inspectors are to give their whole time to the work. An advisory body will also be formed to guide the Home Secretary, as with him lies the power of giving or withholding certificates to make experiments on living animals in research work.

There is no doubt that we are developing a large and increasing population who have never been vaccinated. Since the Amending Vaccination Act of 1907 exemptions from vaccination have increased enormously, and it is stated that in certain towns in the provinces less than 10 per cent of the children born have been vaccinated in recent years. The antivaccinators openly rejoice in these results, but medical officers of health all over the country are issuing warning notes. It will be an anxious time for the health authorities should there be an epidemic of smallpox with such a large proportion of unprotected persons. The government does not realize that it is its duty to compel vaccination as well as to provide it, and stronger measures should be taken to educate the public as to the value of preventive medicine.

We regret to have to record the death of Lord Ilkeston, who was equally well known both as a politician and as a medical man. As Sir Walter Foster he sat for many years in Parliament, and though a strong party man he never forgot that he was also representing the interests of his professional brethren. His services to the profession in obtaining direct representation on the General Medical Council were invaluable. Subsequently he held the office of Parliamentary Secretary to the Local Government Board. In addition to all his political work he carried on a large private practice as consulting physician, and also contributed various writings on professional subjects.

The University of Liverpool has lost one of her most brilliant men by the sudden death of Dr. O. T. Williams at the early age of thirty-five. Dr. Williams had a splendid record as a student, and had already attained marked success in scientific research. His work in biochemistry is well known and his services as a teacher were much appreciated. Not only Liverpool but the whole profession has suffered a loss by the early death of a man who was expected to do valuable work in experimental research.